RISC user

MAY 1995
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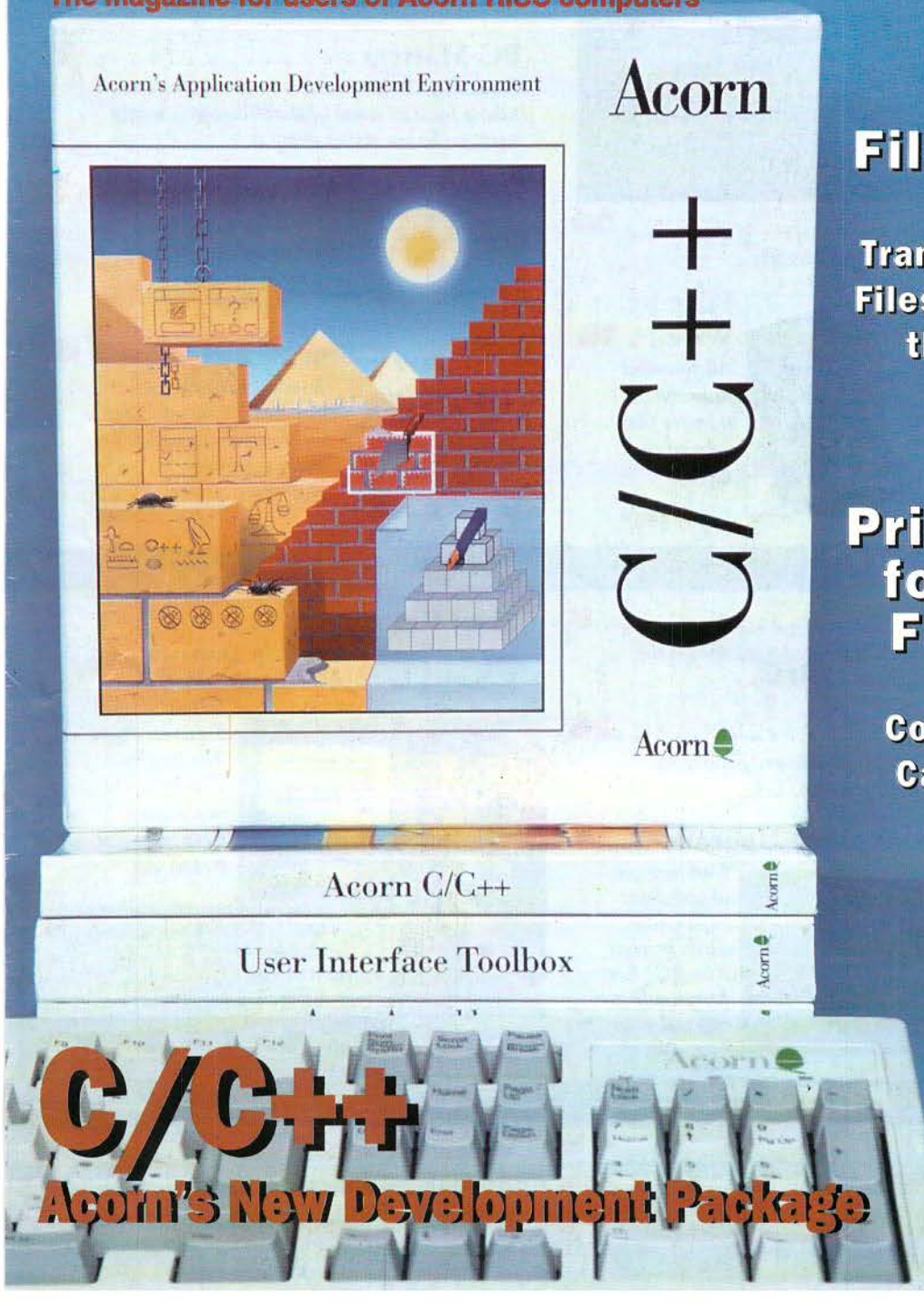
The magazine for users of Acorn RISC computers



Files by Wire

Transferring Files Around the World

Printers for the Future

What's Cooking at Calligraph

C/C++

Acorn's New Development Package

THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

RISC User

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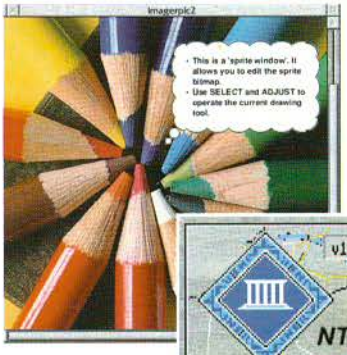
imagerpic2
This is a 'sprite window'. It allows you to edit the sprite bitmap.
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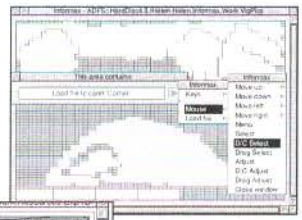

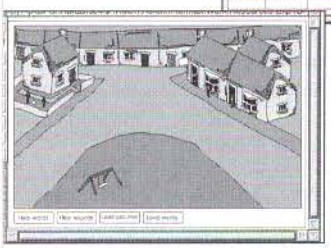

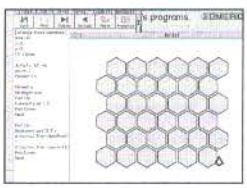

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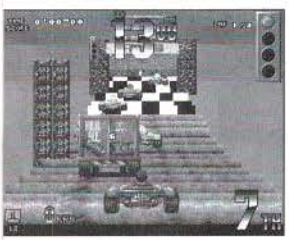

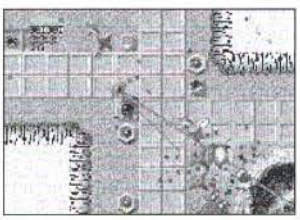

Prime Mover 53
Is Minerva's latest offering something to get animated about?

Occasionally my blood boils. Sometimes it's because of some perceived injustice in the world. But other times it's because I hear or read some ill-considered remark about Acorn. Twice recently I've been asked for advice on buying a computer, by people with no previous experience. I spent a lot of time explaining the options; that Acorns have a lot of advantages to the first-time user; that PC compatibility is no longer an issue; that Acorns may be a bit more expensive but you get what you pay for. I demonstrated my system and they were impressed with its speed and ease of use, particularly when I was able to show RISC OS operating alongside Windows. Both went to Acorn dealers, and in one case to Acorn World, and liked what they saw. Then other acquaintances (in one case a teacher) said "Oh you don't want to buy an Acorn, they're rubbish". And both went out and bought a cheap PC (one had problems straight away and had to pay for help since the dealer washed his hands of it once the sale was made - I must confess to being very naughty and letting a smile cross my lips at that point!).

My blood boiled again when I read in a magazine that schools had wasted 10 years by becoming wedded to Acorn technology, and that Acorn systems had cost them many times the price of PC equivalents. The theory seems to be that kids would have been better off learning on the same machines they will be using when they leave school. So what is the current state of the art in commercial computing? If you assume that the PowerPC is the latest trend, then the answer is RISC processors and multitasking GUIs. Now think back to 1989, when today's graduates were in secondary school... which child would be getting the better grounding in today's computing techniques - the one using the DOS command line on a 286 to run single-tasking programs, or the one using a RISC-powered Acorn with a multitasking GUI?

And when did an Acorn computer ever cost many times a PC equivalent? I agree they are somewhat more expensive, but even that comparison is flawed. Windows applications are horrendously complex and need maybe 10 times as much hard disc space, plus many times more RAM to operate, so you actually need a machine with a much higher specification to do the same work. I read in a PC magazine recently that Word for Windows needs 8Mb to run efficiently - 8 megabytes to run one word processor!

What the PC has on its side, of course, is sheer weight of numbers. This shouldn't be an argument for ignoring excellence, and it's up to us to keep spreading the word. I wish you better luck than I've had recently!

Alan Wrigley

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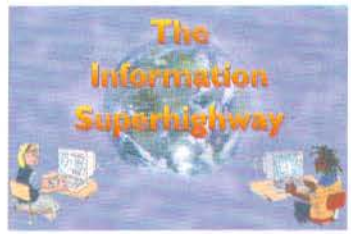
NEWS

Consulting the Online Oracle

Online Media has concluded a deal with Oracle Corporation to support Oracle New Media software on its set-top boxes. Oracle (not to be confused with the ITV teletext service) is a widely-used multimedia authoring and server environment which enables compatibility to be maintained across a wide range of hardware platforms.

More details are emerging about Phase 2 of Online Media's Cambridge trial. The latest company to be signed up is Tesco, which will join the Service Nursery, as it is called, to explore the potential for home shopping via DiTV (digital interactive television). Phase 2 started on 30th March with ICL's new server (mentioned in last month's News) being switched on. Current plans are for 250 users to be connected during 1995, but the ICL server is capable of supporting 7000 connections (with 1400 Gigabytes of disc space on the server).

Finally Online Media has unveiled version 2 of its set-top box. The original box looked as though it was born in a laboratory (which it was), but the second generation box looks more like a consumer product, with a sexy front panel in true 90s style. The box uses an ARM7500 processor, which is an integrated chip combining the CPU and the graphics, memory and I/O controllers in a similar fashion to the ARM250 which was originally designed to power the A3010/3020 series. The box will be available in the third quarter of this year.



The Appliance of Science

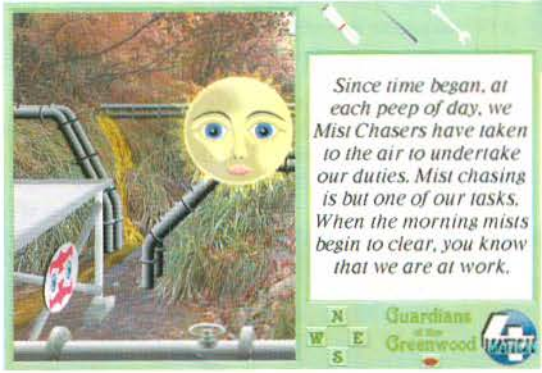
A new exhibition on the Information Superhighway has just opened at the Science Museum in London, and features Acorn kit in a major way. There are three Risc PCs fitted with touch screens running interactive displays about the Internet. And if this were not enough, there is also an Online Media set-top box, complete with a massive remote controller which can be used by the public (though spies tell us that the system is not actually live, but runs from an internal hard disc).

In the dedicated 'Surf City' area of the exhibit there are six live systems on which first-time users can log on and surf the Internet, aided by experienced helpers.

The Information Superhighway exhibition runs from 26 April to 3 September 1995, at the Science Museum, Exhibition Road, South Kensington, London SW7 2DD (tel. 0171 938 8000). It will then move to Manchester.

Friends of the Earth

Can you help us?
The Clunkers killed my mate three nights ago and I fear that they will soon return to claim the rest of my family.
leave
Guardians of the Greenwood

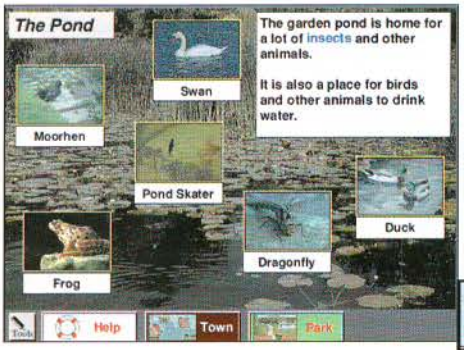

Since time began, at each peep of day, we Mist Chasers have taken to the air to undertake our duties. Mist chasing is but one of our tasks. When the morning mists begin to clear, you know that we are at work.
N
W E
S
Guardians of the Greenwood

Guardians of the Greenwood is a CD-ROM from 4Mation described as an eco-fantasy for children in the 9-14 age range. The storyline has the inhabitants of the Greenwood saving their habitat from development, and aims to highlight many of the problems facing the environment in the real world. It contains over 30,000 words of text, all of which can be heard as well as displayed, together with music, sound effects, graphics and animations. Guardians of the Greenwood costs £49.50 ex. VAT, and details can be obtained from 4Mation, 14 Castle Park Road, Barnstaple EX32 8PA, tel. 01271 25353, fax 01271 22974.

NEWS

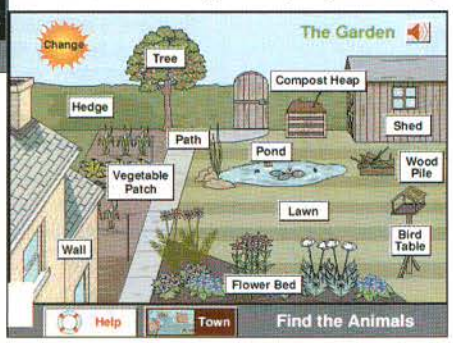
Multimedia Comes to Oldham

Oldham-based SEMERC, originally set up as a local authority-operated special needs service, has finally made it to the big time. It has been taken into the fold by the Thomson Corporation, where it will sit alongside Thomas Nelson, Yorkshire Television, Interactive Learning Productions and Academy Television, names well known for producing high quality multimedia resources on the Acorn platform. The acquisition of SEMERC gives Thomson full coverage of the educational market, and enables SEMERC to draw on the resources of a large organisation. For more details on SEMERC's products, they can be contacted at 1 Broadbent Road, Watersheddings, Oldham OL1 4LB, tel. 0161 627 4469, fax 0161 627 2381.



Anglia Goes Gardening

Garden Wildlife is the title of a new CD-ROM from Anglia Multimedia, the first disc to appear under Anglia's new policy of supplying multi-platform CDs. It is aimed at the primary education market and provides an introduction to the wildlife children might expect to find in parks and gardens. The disc makes much use of close-up photography and also video clips from Anglia TV's *Survival* series. Anglia's *Castles* CD-ROM is also being re-released in multi-platform format, and is being used by English Heritage at some of its castle sites to provide information for visitors, who can control the CD by means of a touch-screen. Anglia Multimedia is at Anglia House, Norwich NR1 3JG, tel. 01603 615151, fax 01603 622191.



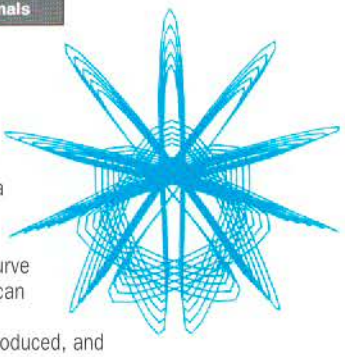
The C Team

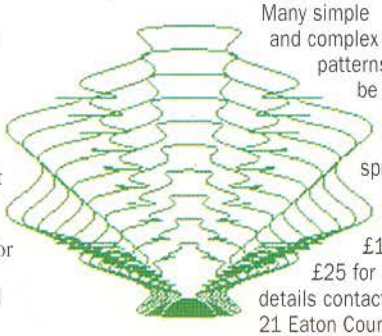
The Association of C and C++ User (ACCU) recently held a programming challenge, at which the Acorn team, using the new C/C++ system from Acorn (see review on page 26), picked up several awards and were only just beaten by the IBM team as overall winners. Other teams participating were from Microsoft, Borland and Symantec.

The ACCU is a non-profit making organisation that aims to provide a forum for all users of C and C++ across the world. It has various special interest groups, one of which is the C Acorn User Group. For further information on the ACCU contact the Membership Secretary, 64 Southfield Road, Oxford OX4 1PA, email membership@accu.org.

Music of the Spheres

Curvemaster from Arthur Ellis-Davies is a package which draws harmonic curves. Many simple and complex curve patterns can be produced, and by exporting the results as a sprite or Draw file, they can be further manipulated, coloured and filled. Curvemaster costs £15 (no VAT) for a single user and £25 for a school site licence. For more details contact Arthur Ellis-Davies, 21 Eaton Court, York YO2 3NJ.





Performance of a Lifetime

Sibelius Software has set the world of music buzzing after its Sibelius 7 application performed on a Risc PC (wearing a bow tie!) at a live concert. The occasion was the 10th London International Composers' Festival, and the pieces played were two piano works by the Hungarian composer Ligeti, generally considered almost impossible for a human to perform. Sibelius 7's new 'Espressivo' feature was able to add expression to the pieces in the same way that a pianist might have done. The works were performed on a grand piano fitted with motors to translate MIDI information from the computer into the correct motion for the keys and pedals. Sibelius received a standing ovation, and the composer himself was said to be very impressed. The event caught the attention of national and worldwide press and television, but unfortunately the word "Acorn" was largely notable by its absence - one report referred merely to a "Sibelius 7 computer".

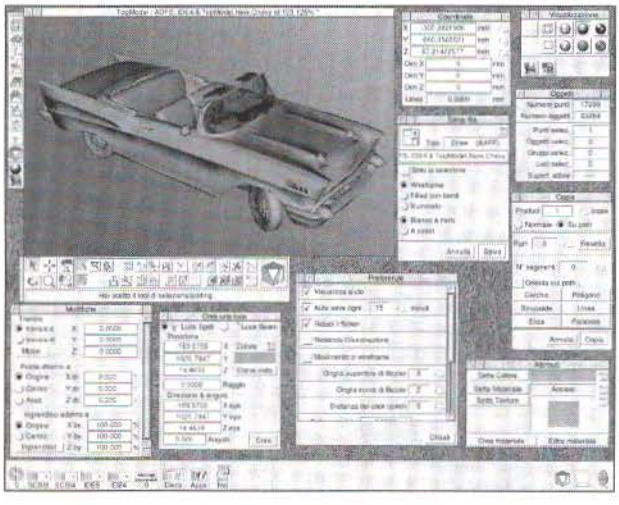
CD Burns in Cambridge

Cambridgeshire Software House has announced a new CD-ROM entitled *The World of Robert Burns*, to celebrate the bicentenary of the poet's death. Produced in association with the Dumfries and Galloway Education Authority and costing £79.95 inc. VAT, the CD contains all Burns' poems, extracts from his letters and songs and hundreds of pictures. The package is supported by worksheets and a cassette tape of original recordings and recitals. There is a great deal of interest from around the world in this celebration of Scotland's national poet, and further details can be obtained from CSH at 8 Bramley Road, St Ives, Cambridgeshire PE17 4WS, tel. 01480 467945, fax 01480 496442.

Today Acorn, Tomorrow the World

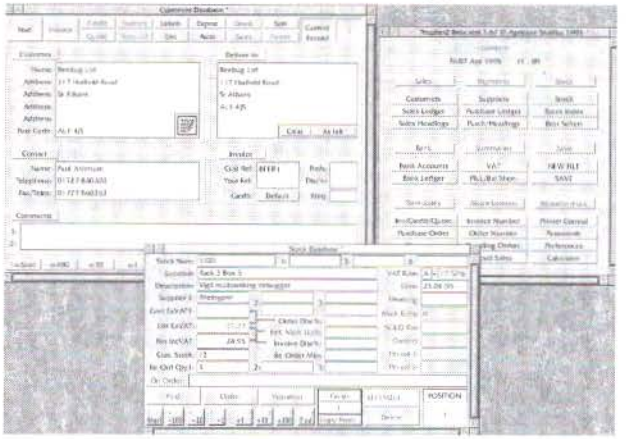
This year's Acorn World exhibition will again be held at Wembley, from 27-29 October 1995. We'll be giving you more information nearer the time, but for now make sure you put the dates in your diary for the biggest event in the Acorn calendar.

Top Italian Model Gets the RISC OS Treatment



Italian Acorn developer Sincronia Soluzioni Multimediali has launched what is claimed to be the first truly professional 3D modelling application on the Acorn market, entitled *Top Model*. It features real-time Gouraud shading and texture mapping, fast Phong shading, real-time editing, file import for Render Bender, PC 3DStudio and Amiga GEO formats, and many other exciting professional facilities. The program is written in optimised ARM code for speed. Further packages are being developed which will integrate with Top Model and provide ray-tracing, animation and other graphics functions. *Top Model* is available in pre-release form for £99 ex. VAT, with an upgrade to the full version free of charge when it becomes available. Owners of Euclid, Render Bender, SolidCAD, Illusionist or ArchiTech can purchase Top Model for £70 if they trade in their old package. For full details contact Sincronia Soluzioni Multimediali at via Bastone 35, 10090 Rosta (TO), Italy, tel/fax 0039 11 539173.

The Second Coming



Harrogate sees the launch of *Prophet 2* from Apricote Studios. This new version of Apricote's popular business accounts package has undergone a major redesign and now justifies its name by including forecasting functions. Also new from Apricote are an updated version of *Personal Accounts*, and a new version of its share management application, *Shares* 4, which now has direct links to Computer Concepts' teletext card for downloading share prices. Prices (all inc. VAT) are as follows: Prophet 2 - £199.95; Personal Accounts 3.50 - £49.95; Shares 4 - £39.95. For more information contact Apricote Studios at 2 Purls Bridge Farm, Manea, Cambridgeshire PE15 0ND, tel/fax 01354 680432.

A Stitch in Time

Cross stitch and tapestry design is now possible on the desktop with *XStitch* from iSV Products. It can take any sprite file and produce a full cross stitch pattern using up to 64 colours from 512 industry standard thread colours. The pattern can be exported as a Draw file enabling it to be dropped into a DTP package, and has many additional features such as automatic calculation of finished design size, over 10,000 stitches per pattern and support for a wide variety of materials. The package costs £21.50 inc. VAT, and further details are available from iSV Products, 86 Turnberry, Home Farm, Bracknell RG12 8ZH, tel. 01344 55769.

Poster Power

The latest addition to Acorn's professional publishing system is a colour poster printer offering greater performance and substantially lower cost than any of its competitors. Based on the NovaJET III inkjet printer and a Risc PC, the Acorn Poster Publisher system costs around £11,000 and offers full colour photographic quality poster printing at up to A0 size, direct from the RISC OS desktop. The results are quite stunning. For further details contact Acorn's Professional Sales Division at Acorn House, Vision Park, Histon, Cambridge CB4 4AE, tel. 01223 254254, fax 01223 254262.

A smash-and-grab raid at Acorn's exhibition contractors recently resulted in a large number of Risc PCs and monitors being stolen. Readers are warned to be on the look out for any secondhand equipment being offered for sale in suspicious circumstances.

New from The Really Good Software Company is *VideoTrak*, which allows you to manage and maintain your video collection. Once you've entered details of your cassettes, you can locate any film by title, actor, director etc., and all categories are cross-referenced enabling you, for example, to obtain a list of all films featuring a particular actor. VideoTrak costs £35 inc. VAT and can be obtained from The Really Good Software Company, 39 Carisbrooke Road, Harpenden AL5 5QS, tel/fax 01582 761395.

The latest incarnation of the Tesco *Computers for Schools* scheme kicks off on 24th April this year, and runs until 2nd July. As in previous years, customers shopping at Tesco can earn vouchers on their purchases, which can then be redeemed by schools for the purchase of equipment. Since its inception in 1992, the scheme has been responsible for the purchase of 64,000 items of Acorn equipment by schools. Schools should by now have received information packs from Acorn about the scheme. If you haven't had one and you would like one, contact Acorn on 01223 254254.

Longman Logotron has two new Landmarks packages available. *Landmarks Victorian Era* follows life in an English village between 1780 and 1880, covering the social changes brought about by the industrial revolution. *Landmarks Ancient Civilisations* is a PinPoint datafile containing information about eleven ancient civilisations including the Romans, Aztecs and Egyptians, and focussing on historical and geographical aspects. Contact Longman Logotron at 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. 01223 425558, fax 01223 425349.

In our News pages in March (RU 8:4) we mentioned that Robert Lytton had discs available for National Curriculum Key Stages 1-4. Robert has now informed us that as a result of problems with HMSO he can no longer supply this information.

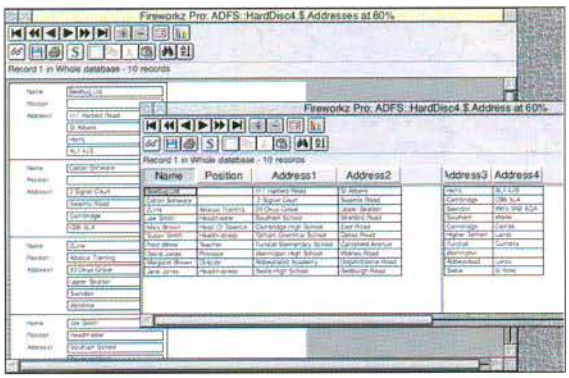
The Wakefield Acorn Computer User Group is changing its meeting night to the first Wednesday of each month with effect from July. The group is one of several thriving Acorn groups around the country and welcomes Acorn enthusiasts to its meetings. The group wll have a stand at the Acorn User show in Harrogate. Contact group secretary Chris Hughes for further details at 95 Cumbrian Way, Lupset Park, Wakefield WF2 8JT, tel. 01924 379778 (evenings).

Fireworkz Pro

Peter Jennings looks at Colton's new integrated package - a true successor to PipeDream?

A lot of new software arrives in an impressive looking standard size cardboard box, which turns out to have a cardboard insert to prevent the disc and slim instruction leaflet (sorry, I mean the manual) rattling about inside. Not so when you buy *Fireworkz Pro*. The box holds three discs containing program and examples, and is crammed full with four substantial wire-bound books which really do deserve to be called manuals. They are the *Getting Started Guide*, *User Guide* and separate database and spreadsheet guides, together totalling more than 600 pages - and this is all despite Mark Colton saying in RISC User last year that "If you buy Fireworkz I hope you don't need to use the manual"!

Fireworkz Pro is an integrated package incorporating Colton Software's word processor (*Wordz*) and spreadsheet (*Resultz*) - both previously available separately - with its new database, *Recordz*. All the applications share a common look and are controlled by similar button bars. Wordz was reviewed in RISC User 6:6, Resultz in RISC User 7:1 and Fireworkz, which combined the two, in RISC User 7:3. So this review will concentrate on the database, which is also available separately, and on changes to the earlier programs. I will refer to the three elements of the package by their Z family names but, as the programs when bought separately can vary in some details, the names will always refer to the Fireworkz Pro versions.



Database files can be switched between card and sheet format. Unnecessary titles, such as for address fields, can be removed from cards for a neater display.

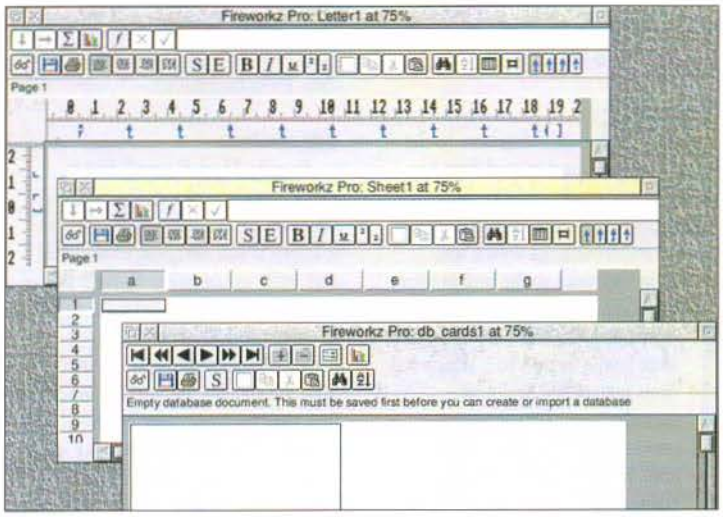
A Powerful Engine

Recordz uses the Iota DataPower database engine and files are interchangeable between the two programs. It has a 175-page indexed manual and, as the methods of setting up and editing vary greatly between different database management programs, you will almost certainly need to use this. The display can be in sheet form, with columns and rows in spreadsheet style cells, or as cards, and it is simple to switch the layout between them. The choice of format is useful. If the individual fields are narrow enough to fit across the screen, a sheet makes it possible to see a page full of records at a glance and it is easy to compare entries in the same field in different records. Cards can more easily accommodate bigger blocks of information in individual fields, and they have much more flexibility in their design and presentation.

If you intend using only the sheet format this can be set up in a spreadsheet, using one row for a record with a column for each field, and the cheaper non-Pro version of Fireworkz is all you will need.

Starting Out

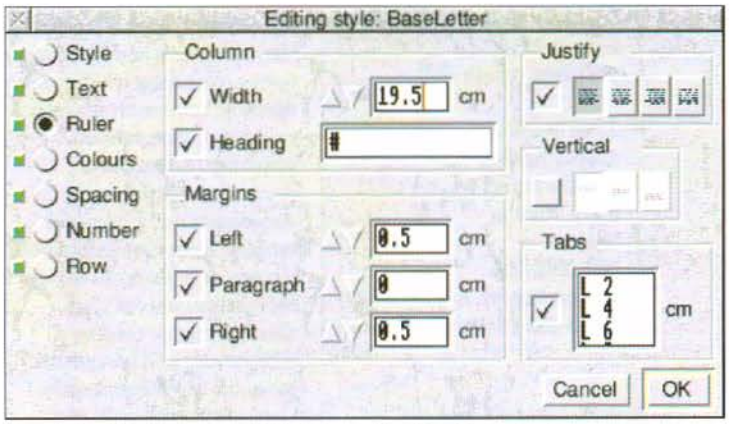
A new database is created by loading a template, and there is an initial choice of sheet format or one or more cards to the page. Other templates can be added by the user.


Fireworkz Pro: Letter1 at 75%
Fireworkz Pro: Sheet1 at 75%
Fireworkz Pro: db_cards1 at 75%
Empty database document. This must be saved first before you can create or import a database

The button bar on the database (seen, at bottom, in card format) differs slightly from the one used by both word processor and spreadsheet. In sheet format, the database has similar cells to the spreadsheet.

The empty database then has to be named and saved before anything further can be done. The field names are typed into a dialogue box, and in sheet format they appear across the top of the page as column headings, each one the same width as its name. On cards the field names appear in a vertical row, each with its data field box beside it. All fields are initially set as text and this has to be changed where necessary. The available field types are: text, number (for integers), real (numbers with or without decimal points), date (with a choice of formats), Boolean (Yes or No values), formula (for the results of calculations), interval (time intervals such as hours of work) and file (holding the path name of a sprite or Draw file to be incorporated which had not been implemented in the version I have).

As the fields on sheets are created with the same width as their field names, and the titles and data boxes on cards are set at arbitrary lengths, any records entered will probably not all be visible on screen until the sizes have been adjusted. This is carried out quite simply but it is one more step in a rather involved setting up process. However, each database has to be created only once.



The style editor is a powerful tool for customising documents.

Changing between sheet and card layouts is simply done with a click on a button. The number of cards to be displayed on screen, horizontally and vertically, can be set and their fields can be dragged to new sizes and positions. Individual field titles can be turned off and this can give cards a less cluttered look by removing unnecessary wording such as "Address2", "Address3" and so on.

Fields can also be hidden, on both cards and sheets, and this can be useful to keep sensitive details off the screen or just for a clearer display if the full information does not always need to be on view.

Searching the Archives

Récordz has a very sophisticated search procedure. It is carried out from a window which displays a list of all non-hidden fields with two boxes beside each. The first box has a menu icon which offers a choice of search actions: *is*, *is not*, *contains*, *does not contain*, *is greater than*, *is less than*, *don't care* (the default, which means no search is required on that field), *is empty* and *expression*. The adjoining box allows the search pattern to be entered and there are numerous options described in the manual. The results of a search are produced as a subset of records which can either include or exclude those which conform to the search pattern. Details of the search are added to an "active queries" list, which enables the results to be viewed again or the search to be repeated, with amendments if necessary, at any time. Spreadsheet operations can also be carried out on a database, and a database can be inserted within a spreadsheet or word processor document. When the two programs are combined in this way,

the button bar changes to and from the database format as the caret enters or leaves that part of the display.

Recordz databases always show the full button bar and so can be edited at any time. Against this, the rows of icons and the large page layouts make the records less neat on screen than other databases which use separate editing tools and do not display them.

Product Fireworkz Pro

Supplier	**Colton Software** **2 Signet Court** **Swann's Road** **Cambridge CB5 8LA** **Tel. 01223 311881** **Fax 01223 312010**
Price	**Fireworkz Pro £175.07** **Upgrade from Fireworkz £57.58** **Upgrade from Wordz £104.58** **Upgrade from Resultz £81.08** **Recordz £116.33** **(All prices include VAT)**
	ZLine User Group **Abacus Training** **29 Okus Grove** **Upper Stratton** **Swindon** **Wilts SN2 6QA** **Subscription inc. four discs £22** **Single disc £6** (both prices inclusive)

The three programs in Fireworkz Pro do not always work together as well as you might wish. It is not possible to copy a single record from a card database into a word processor document except by selecting one field at a time. This makes it impractical for some jobs, such as copying a record from an address book database to insert the addressee's details at the top of a letter. To do this you have to set up your address book as a text file. If this is done in Wordz there is then another problem if you want to use an entry for the envelope or address label, as you cannot print a marked block except by indirect means, such as copying and pasting the block to an otherwise empty document and printing it as a file.

Changes

The addition of a database to the word processor and spreadsheet has added some new features to both earlier programs, in addition to some general improvements which will appear in upgrades to the independent versions. The first difference previous users will notice is a new look to the button bar, which has been rearranged and now includes icons for underline, superscript, subscript, search, sort, boxes and table making. Some of the other buttons have been redesigned. Spreadsheet editing has been made easier. Text, numbers and formulae can now be entered directly into a cell, as well as on the formula line, and there is now automatic format recognition which enables figures to be correctly interpreted as currency, date, time or percentage. A template is provided to add this facility to documents saved from earlier versions. Stripes can be generated automatically for tables so that, for example, you can give alternate rows or columns a different coloured background.

One of the new features offers some intriguing possibilities of the type which make you sit back and think up ways of using them. It allows you to set up a list of values or strings which can be defined by numbers. Among the examples given are using figures 1 to 7 to enter the days of the week, 1 to 12 for the months of the year and 0 and 1 (or any higher digit) to enter *false* and *true*; this could even be shown as a cross and a tick by using Selwyn or a similar character font.

Fireworkz, but not Fireworkz Pro or Recordz, is also available in a PC Windows version and the manuals refer to both. This is even more apparent when exporting files, as the "Save other" box offers CSV, Lotus 123, Plain text and Rich text all with their DOS extensions.

Conclusions

Despite Mark Colton's hopes, software as complex as Fireworkz Pro does make it necessary to refer to the manuals if you are going to discover and make use of all the features that it offers, although a lot can be done intuitively. Some of the more obscure points, the ones you are most likely to need information on, can be difficult to find with so many guide books to look through. This is not made easier when some of the information (in the manuals I have) is out of date, with instructions and illustrations of dialogue boxes which do not match those which appear on screen, although this should be put right as the documentation catches up with the upgrades.

Recordz is the dearest of the three programs when bought separately and this would not be my first choice for a stand-alone database for moderately sized address lists, CD collections and similar needs. Others are cheaper, can be quicker to set up and look more attractive on screen, while being more than adequate for most purposes. However, Recordz seems particularly good at handling large amounts of data and multiple fields which can cause problems with some other databases.

If you want the three programs word processor, spreadsheet and database working together from a single icon and having similar button bars to make them easier to learn, Fireworkz Pro provides this at a good saving on the individual prices. Colton offer the full support of a free technical help service and there is also an independent user group, ZLine, which liaises with the company and provides its own postal help and a useful quarterly magazine on disc containing hints and tips, tutorials and example programs.

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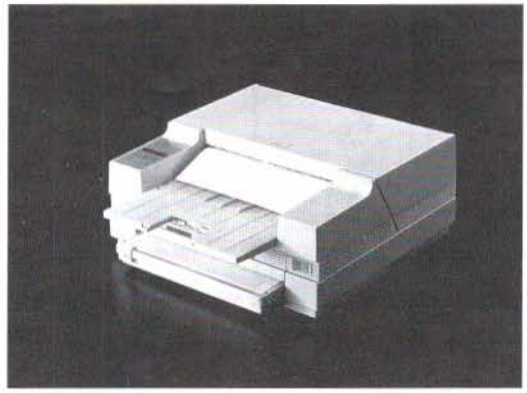
What's Cooking at Calligraph

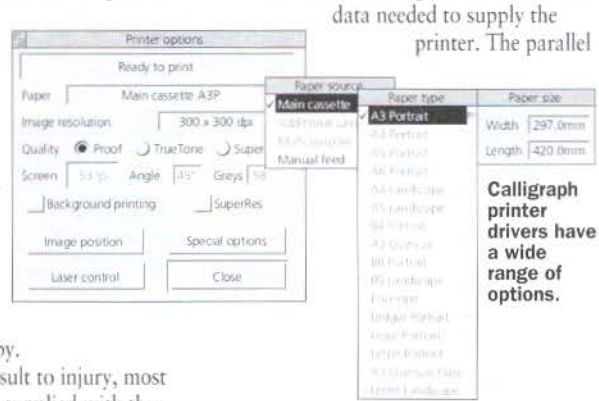
Richard Piller, Technical Director of the Cambridge-based specialists in direct laser technology, explains what makes the company tick



Calligraph Ltd was incorporated in 1990 with the aim of developing a new type of laser printer technology which would overcome all of the flaws of conventional printing. The company employs between 4 and 7 people, depending upon how you count them. The market in which Calligraph competes is the cut-throat world of printer peripherals. So why do we bother, when laser printers are widely available these days?

Conventional printing technology at the time we started was solidly based on the two box principle of computer and separate printer. This requires the computer to convert the image of the page to a series of commands which match the control sequences understood by the printer, then transmit them down the parallel port to the printer's own RAM. The printer then decodes the control sequences into bit-patterns which are transferred onto the paper.

This long-winded process, which requires each device to know about the other, is slowed down further by two bottlenecks. Firstly, the parallel port is a very slow, eight bit interface, really designed for ASCII text printing to a dot-matrix printer (perhaps no more than 2K per page). Secondly, as printer resolutions rose to 300 dpi, the amount of data required to describe a page rose to about 1Mb for a full page of graphics. Lack of availability of low-cost RISC chips, plus the high price of memory, meant that the printer's slow 8-bit CPU had to do much more work to process the page. Printing times became longer and longer, to the point where it was not uncommon to have to wait 25 minutes for some PostScript printers to hand over your hard copy.



Calligraph printer drivers have a wide range of options.

To add insult to injury, most printers were supplied with the minimum of internal memory, and PostScript printers required PostScript fonts which were expensive and cumbersome to download to the printer. Most users were very aggrieved to learn that after forking out £5000 for a PostScript printer, they had to spend another £500 on extra memory and about £100 per font. LaserJets suffered from a similar problem. While cheaper (but more restricted in use), they also needed memory and downloadable non-scalable fonts.

It was all getting a bit complicated and needed someone to find a simpler and more cost-effective solution. This solution appeared with the realisation that Acorn's RISC processor was more than powerful enough to perform all of the processing of the page image. Not only this, but RISC OS supported its own scalable outline fonts, and there was enough memory available in a 2Mb machine to generate the 1Mb of data needed to supply the printer. The parallel port bottleneck was overcome by the use of a video interface, which instead of sending image data to the printer's memory, would drive the printer's optics directly, in real-time.

This allowed a powerful RISC computer to generate (or render) the required page in its main memory bit-for-bit as it should appear on the page,

and then send the image via a video link directly to the optics of the laser printer (now called a laser engine to reflect its transformation from a separate hardware entity into an extension of the computer). The laser engine would then write the image onto the paper. This dramatically increased the speed of both the rendering (because of the ARM chip in the computer) and the transfer (because the video interface is a hundred times faster than the slow printer port).

Our first product was originally scheduled for late 1989, but the suppliers of the original laser engine pulled out at the last moment and we had to find another platform. We eventually found the robust Qume LCS (Liquid Crystal Shutter) engine and built our hardware around that. In truth this did not use a laser beam at all, but the term was somewhat technical and output quality was virtually indistinguishable.

Unbeknown to us, Computer Concepts was doing exactly the same thing, also eventually settling on the Qume. There was considerable embarrassment on both sides when we each proudly announced our respective revolutionary technologies in the same week!

The Qume served us and our users faithfully for two years, when we realised that the market does not stand still and we had better pull another rabbit from the hat. That resulted in the ArcServer printer, a very robust 8 ppm (pages per minute) printer using the same technology as the Qume, and ideally suited to high volume network printing.

Subsequent designs using Canon and Sanyo engines allowed us to raise the apparent resolution of our printers to 800 dpi in the horizontal direction, and to apply a smoothing technique to the data to increase the apparent resolution in the vertical (none of these machines can exceed its base step-rate resolution in the vertical - see the section entitled *Real Resolution*).

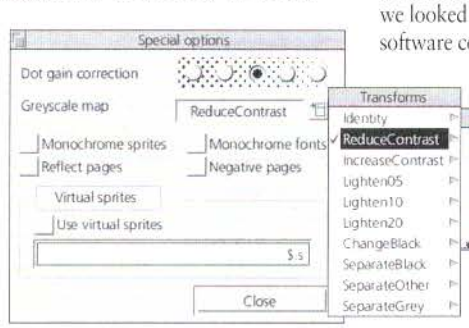
Current Models

With faster processors and more memory becoming available, it was apparent that the technology could be stretched further, so in 1993 we began work on a large format A3 printer, the TQ-1200, based on the Toshiba true 600 dpi engine. This allowed us to double the resolution to 1200 dpi, giving super sharp edges and good grey halftoning. As far as we are aware, we were the first company in the world to use this engine, now favoured by the likes of LaserMaster, NewGen, CalComp, Roland, GCC and many others.

At the same time the Acorn buying market was broadening to include more professional users who demand very high quality, throughput and flexibility, something not obtainable with the then range of standard printers. So we set out to make a printer that could do all of the things that the professionals wanted, as well as satisfy the home user.

The TQ-1200 printer is now used by a number of publishing and typesetting concerns, most of whom produce their copy in-house and generate either camera-ready copy or polyester printing plates for offset litho presses. It is also used by a number of music typesetters and composers for final output to their publishing houses. Recent developments have enabled us to produce a slightly cut-down version, the A3-1200, for less than half of the original price.

In 1994 a high quality A4 printer followed with the same features (i.e. a true 600 dpi engine enhanced to 1200x600) but at substantially lower cost. This is capable of printing over the edges of A4 paper, which is very useful to those needing to print crop marks on camera-ready copy. Printing costs are reduced to about 1 penny per page, a fraction of the cost of operating a bubble-jet printer, for example.



Variable contrast control is a feature of the drivers.

Software drivers

At the same time as trying to advance printer hardware technology, we looked at ways in which the software could be improved. The standard Calligraph printer drivers now offer a number of useful features which are seldom found on other systems, such as variable gamma correction, negative printing and mirrored output. Another feature is an OPI-like facility called *Virtual Sprites*. Large sprites in a document can easily consume all of the memory in the computer, making printing either very slow or impossible. The solution is to use 1/16th size sprites in the document, while the original large sprites reside on disc and are only used at print time.

Network Printing

Since page rendering is done in the computer, direct lasers perform well over networks where printing demands are heavy, since the pages are only being copied to the printer at the printing end; all the clients are rendering their pages themselves, so there are never bottlenecks at the printer server. This is in stark contrast to PostScript printers, where sometimes a single page can hold up everyone's printing for 10-15 minutes.

PostDoc

Recently, user feedback caused us to look for a PostScript Interpreter for the printers, largely because our systems are being used more and more in multi-platform environments these days. This means that publishers are accepting material from a variety of different sources, and the common denominator of these sources for document interchange is PostScript. So, with the *PostDoc PostScript RIP*, Calligraph printers are turned into PostScript printers.

This RIP (Rasterising Image Processor) comes from Rapport Ltd, a company with good experience in writing PostScript interpreters. The RIP is a full Level 2 implementation of the language. It is fast, and interfaces very cleanly with our printer driver. It uses PostScript Type 0, Type 1 and Type 3 fonts available from a number of outlets.

PostDoc also allows you to preview a PostScript document either as a Draw file or as a sprite before you print it, or if you are actually outputting PostScript to a typesetting bureau, allows you to check that the document is correct before you waste precious pounds per page getting it wrong.

The Future

So where do we go from here? We are currently looking at a number of areas: low-cost 600x300 dpi laser printers for home users and schools which could sell for less than £500; and even better quality 900 and 1200 dpi laser printers.

At £500, laser printers are heading down towards bubble-jet prices, while the costs of running a laser printer are a fraction of those for a bubble-jet. Not many people do the calculations for the operating costs of bubble-jets - some of them cost about 10p per page, which is really quite expensive. Most laser printers, on the other hand, operate at around 2-3p per page. The A4-1200 is particularly economical at about 1p per page. If you do the calculations, the additional capital cost of a laser printer over a bubble-jet is very soon recouped.

Why only sub-£500 you might ask, when some lasers cost about £300? Well, those £300 printers are all Windows printers that only work on PCs. They operate through the parallel port, and the image data is created by the PC and sent to the printer (quite slowly) in some proprietary way. They cannot be used directly on an Acorn platform. So in order to use one of those printing engines, we have to get into the video interface, which we can drive at Calli-speeds through an expansion card.

Professional 1800 dpi Printing

Finally, we hope to show an 1800x900 dpi A3 engine at the Acorn exhibition at Harrogate. This uses a similar engine to that of the current A3-1200, but it has better optics and stepping rates, which allow us to achieve the higher resolution. 1800 dpi gives us a 225% improvement in dot density over the A3-1200 printer. This means that every screen frequency will have enough grey levels to print even the most difficult graduated fill smoothly.

Real Resolution?

How does resolution enhancement work?

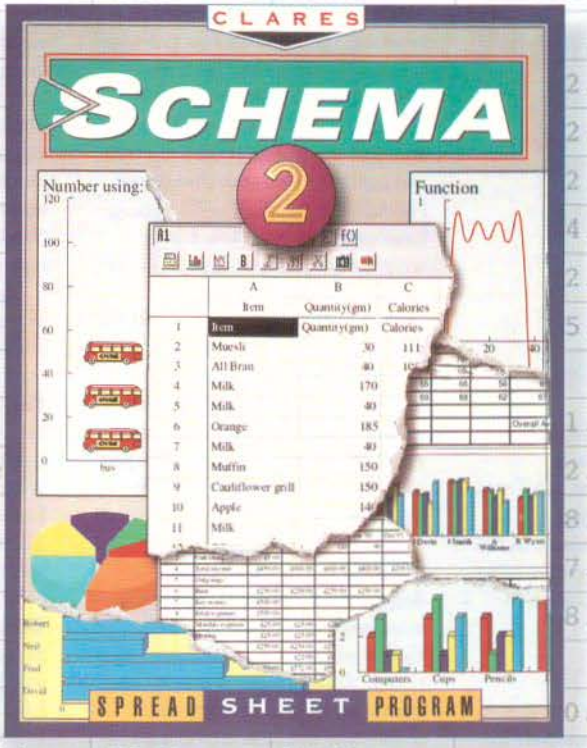
Considerable increases in apparent quality can be gained by artificially changing the resolution of the laser printer, but there are some real constraints. Firstly no laser printer currently on the market can magically double its base resolution in the vertical, either by software or hardware. So forget any product that announces that it is 600x600 dpi when it uses a 300 dpi engine to write the dots. It is impossible.

The best that can be achieved is to raise the frequency at which the laser beam is switched on and off. For example, the 300 dpi laser printer interface pulses the laser beam at up to 800 dpi in the horizontal which gives very smooth steep curves and lines but does not improve shallow gradients, which are still affected by the 300 dpi line step rate.

To do this, some software pre-processing is performed on the image to give the appearance of smoother lines at shallow gradients. This involves calculating where a step is about to occur and selectively switching on or off some of the pixels around the transition. This process is known as half-bitting. The principle behind it is that laser printers are incapable of attracting toner to a single small dot that is below the toner threshold, and so, in isolation, nothing appears on the page. However, if a sub-threshold half dot is placed beside a full sized dot, the result is a one-and-a-half dot, where the new dot is pulled in the direction of the half dot. This technique allows the software to fill in the steps in a shallow line. Most laser resolution enhancements rely on variants of this scheme.

ZZZZZZZZZ

Don't let your figures send you to sleep



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Netline

Alan Wrigley conducts this month's tour around the Internet

At the time of writing, the commercial packages promised by Acorn, ANT and DoggySoft have not yet been released, so any practical hints in this article will assume that you are using the various PD applications based around TCP/IP.

It's All Jargon to Me

Unfortunately for newcomers to the Net, this is an environment where jargon definitely still rules OK. Here is a very brief explanation of some of the terms you are likely to encounter in your early days. We'll be looking in more detail at many of these items in future Netline articles.

ftp stands for file transfer protocol. ftp is a standard Internet tool that enables you to download files from other sites around the world. This is probably one of the first facilities of the Internet that newcomers will use.

telnet is a tool which allows you to log in to a remote computer and use it as if you were operating a terminal connected to that computer. It may be on the other side of the world, but the magic of telnet allows you to use it as if you were sitting at its own keyboard. This enables you to browse through databases and libraries around the world, for example. It also allows you to connect directly to another user on-line at the same time, and conduct a two-way chat session. For Acorn users, the TCP/IP package handles this by providing a split screen; what you type appears in one half and the other person's text appears in the other - clever stuff! To start it off you just type *telnet <user@domain>* (e.g. *telnet fred@bloggs.demon.co.uk*). I haven't tried telnetting to a non-Acorn user yet - I guess it would depend on their Internet software as to whether it works or not.

gopher is a tool which was designed to allow people to navigate more easily around the Net. It's a kind of world-wide menu-driven filing system. An organisation may set up a gopher server on its system which enables you to access information by following menu paths (using the PD *Gopher* application on RISC OS displays these in Filer-style windows where you simply double-click on the item of interest). A gopher server may have links to other servers, to ftp sites, telnet connections and so on. To try it out, run *Gopher* alongside TCP/IP, choose a site from the default list on the pop-up menu, and browse. Be prepared for the occasional delay in accessing a menu item - in my experience it can take several minutes for a response if the system is busy.

Archie has nothing to do with the Archimedes, but is a powerful search tool that can help you find any file anywhere on the Internet. Archie can search through the list of files on any ftp site (that's about 2.5 million filenames), match names to a search pattern specified by you, and display the results. To use the facility you have to telnet to an Archie server. There aren't huge numbers of these, and you are recommended to use one locally if possible, so for the UK this means either Imperial College or Hensa. To get to the one at Imperial, type:

telnet archie.doc.ic.ac.uk

There is an on-line manual available, and the best way to read this is to open a spool file (follow TCP/IP's *File>Open Spool* menu and drag the file icon to a directory viewer). Now type *manpage* at the archie prompt. When the manual display has finished, close the spool file from the TCP/IP menu and it will contain the text of the manual.

URL stands for uniform resource locator, and is really just a jargonised way of saying "Internet address". A full URL contains details of the type of address (ftp, telnet, gopher etc.), followed by the address itself. Typical URLs are:

gopher://gopher.microsoft.com
telnet://pucc.princeton.edu
http://www.cs.ucl.ac.uk/misc/uk/intro.html

When accessing gopher, telnet and ftp addresses, you normally omit everything up to and including the double slash (//), but WWW addresses (the ones which start *http*) should include the whole URL (at least on the PD software currently in use).

IRC stands for Internet Relay Chat, which is a system designed to allow you to chat in real time with other users - a bit like the BT chatlines, or like playing a multi-user game without the game. To access it you

normally have to telnet to an IRC site, from where you can either join an existing discussion on a topic that interests you, or you can start your own and hope that other people will join you. I haven't explored IRC yet, but I will report on it in a later issue.

finger is another Net tool with several uses. Its basic function is to get information about any other user on any system which is currently on line. For example, if you type:

finger fred@bloggs

then if the site *bloggs* is on line, and has a user called *fred*, you will get back whatever information about Fred that he wishes to make public. If you want other people to obtain information about you if they finger you, you need to provide a text file with the same name as your user name, placed inside the directory *!TCPIPUser.Finger*.

You can also find out if there is any post waiting for you in the system by fingering the post server, e.g.:

finger bloggs@post.demon.co.uk

It's quite useful to do this automatically when you log on, since if someone is sending you a file by e-mail, it can take a long time to arrive if the file is large. You can set a line in the TCP/IP AutoExec file to do this:

finger {node}@post.demon.co.uk

Unless you finger the post there's no indication that any mail is in the pipeline, so you may log off again blissfully unaware that there is 800K of your friend's code sloshing around in the system waiting for you to stay on line long enough to download it.

Read All About It

So you want to explore the newsgroup scene - but how on earth do you find out what groups there are on your favourite topics? Demon maintains a file called *active* which contains a list of all the newsgroups available via Demon. This can be downloaded from their ftp site, and is in the directory */pub/news*. There are two versions: *active.zip* which just has the names of the groups, and *active.Z* which contains some details as well. Once you have this, it can be updated as new groups appear. With NewsBase this can be done by subscribing to *control.newsbase*. Each time you log on you will probably get a new message with a list of groups, and you can save this out as a text file and drop it into *active.dis*. On this month's magazine disc is a little application that will sort the groups into alphabetical order and weed out any duplicates.

On page 52 is a list of some useful Net resources.

Internet in Action

This month I will take a very brief look at what's on offer for music lovers on the Net. There is an enormous amount of material catering for devotees of virtually every kind of music - newsgroups, Web sites, MIDI files to download, mail order CD catalogues and so on. It's simply not possible to cover it all, so I'll merely try to point you in the right direction.

If classical music is your scene there is a thriving newsgroup in the shape of *rec.music.classical*. Anything and everything relating to classical music is discussed here, usually in a well-informed and articulate manner - in fact, compared with most other groups I've tried out, there is a far greater signal-to-noise ratio here (more Net jargon, I'm afraid, meaning that the worthwhile outweighs the trivial and abusive). Newcomers asking for help on classical music are treated courteously, and a message such as "Where do I start with 20th century music?" is likely to generate a lively and ongoing thread, with plenty of opinions to sift from.

Classical Web sites probably lag behind rock and jazz, but there is one called *Classics World* that may prove a good starting point. The address is *http://classicalmus.com*. It is claimed to have over 1800 pages providing a comprehensive resource for classical music, but unfortunately when I tried to access it I couldn't get any links to work beyond the title page. There are other Web sites around - a good way to find Web sites on any subject is to read a few newsgroups and you'll soon find people publicising their own Web pages. Following links from these will often lead you to a wealth of resources.

Rock bands and their fans have cottoned on to the Net in a big way. There are official Web sites set up by recording companies as a focus for a particular band, and there are also many unofficial sites set up by fans, many of which outshine the official sites. There are lots of newsgroups devoted to particular artists (mostly under *alt.music*): Peter Gabriel, Bruce Springsteen, Kylie Minogue, Queen, Jimi Hendrix and many, many more. If you're a Rolling Stones fan, you could try their official Web site, the Voodoo Lounge, which is at:

http://www.stones.com/

As I said at the start of this item, there is so much music on the Net that whatever your tastes, there is likely to be something to appeal to you. If you're stuck for somewhere to start, you could try the newsgroup *rec.music.info*. I haven't looked at it myself, but it's supposed to be a good place to get general information about music on the Net.

Files by Wire

Need to transfer files beyond your own walls? Colin Murray looks at the options

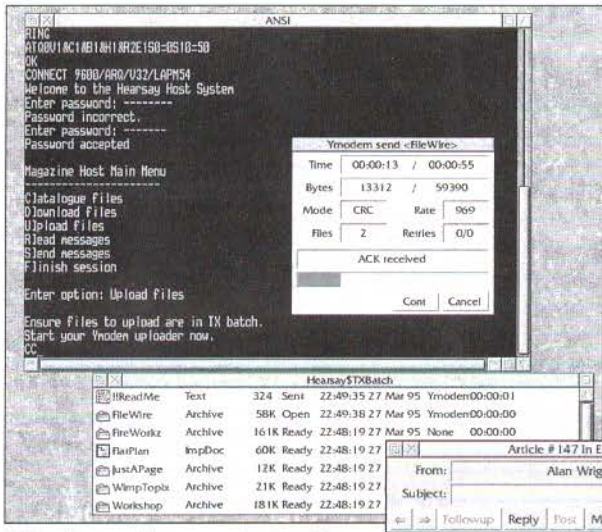
Sooner or later most people need to send a file or two to someone else across the country, or even the world. Until recently, the only way for most of us was to put a floppy into a stiff envelope and hope that it would survive the many hazards it might face on its journey - magnetic fields, torrential rain, 16-ton weights, mail train robberies, dog's teeth... etc. etc.

In fact, it almost seems a miracle that 999 times out of 1000, the precious disc gets through unharmed, though if you think I'm exaggerating the hazards, I have seen a thick corrugated disc box bent nearly double in the post. I've also received a package torn to shreds and soaked to a pulp, with the disc missing.

The US Robotics Sportster is a very popular modem.

These days, with 24-bit images and Replay files around, sooner or later you'll want to send a file which is far too big for even a high density floppy. You could of course use a back-up program to put it onto several discs, but this is just compounding the likelihood of something nasty happening. It's time to look around for alternatives. Sticking with the good old postal system, a removable hard drive such as a SyQuest is fast becoming more than just a luxury, with the size of files and resources such as fonts and clip art mushrooming. SyQuests are a handy way to keep all this stuff at home, and an even handier way to send it to someone else - provided they also have a SyQuest drive of course (and you're happy to have £60-worth of cartridge winging its way around the country). The cartridges themselves are very robust, and should survive at least two of the hazards mentioned earlier! Like floppy drives SyQuests come in two sizes - 3.5" and 5.25" - and in both internal and external versions. Unlike floppies, 5.25" SyQuests are by no means obsolete - they are widely used in the world of PCs and Macs, and are therefore an ideal way of transferring files to users of other systems. All Acorns with RISC OS 3 can read and write to DOS-formatted discs, and with MacFS (and a high density drive) they can do the same with Mac discs.

If you're thinking of getting a SyQuest, give some thought to what it will be used for. If you need to communicate with PCs or Macs (for example to send PostScript files to a typesetting bureau), find out what they can accept first. It's likely that this will be an 88Mb or in the worst case a 44Mb 5.25" SyQuest; if you buy the 88Mb version you can use the 44Mb cartridges with it. If you're buying one just for your own use, or to communicate with other users who will have the same, you should consider a larger capacity such as the 200Mb 5.25", or the 105Mb or 270Mb 3.5" models.



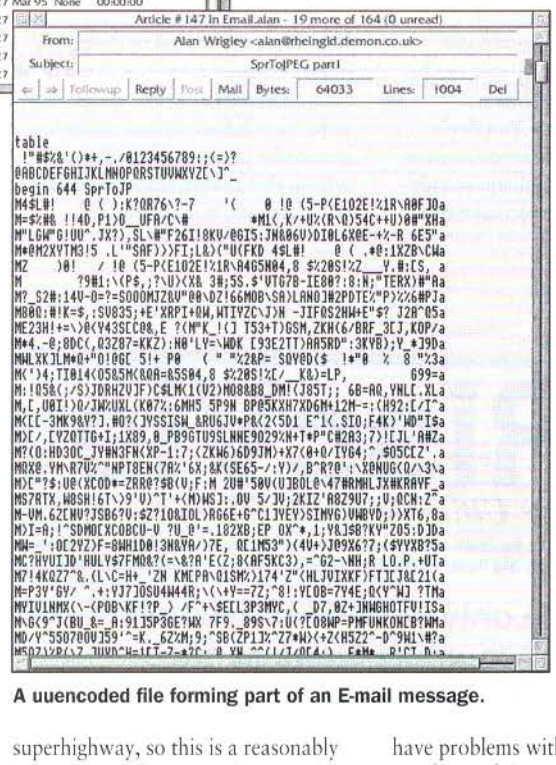
Using Hearsay to communicate with a remote system.

The future is electronic, of course, and it's no surprise that the most efficient (and most problematical!) methods of file transfer are by electronic means. If you already use your computer for fax, it's likely that you have the capability to transfer files. Both CC's FaxPack and David Pilling's ArcFax have a file transfer facility. FaxPack is a complete fax-on-a-card solution that regrettably is no longer produced, nor is it available for the Risc PC.

Nevertheless, if you can get hold of one second-hand, it's an excellent way of turning an Archimedes into a fax machine. However, in order to transfer files the recipient must also have a FaxPack. That said, in my experience it's the easiest and most error-free method of electronic file transfer that I've used - you just drop files onto the FaxPack icon, and they appear on the recipients desktop.

ArcFax works with a fax modem and so doesn't need an expansion card. Again, the recipient must have a copy of ArcFax and a suitable modem in order to receive files. But ArcFax is inexpensive and a modem is a useful thing to have anyway if you want to be part of the superhighway, so this is a reasonably mainstream solution. Both FaxPack and ArcFax have the advantage that you're likely to be using them for fax anyway, so there's a good chance that they will be permanently connected to a phone line. You can therefore send files at any time of day or night and be sure that they'll be received.

All other methods require that both parties have at least a modem, and preferably a fast one (a 500K archive could take half an hour to transfer with a 2400 bps modem, as opposed to 5 minutes at 14,400). Direct modem-to-modem connection is possible if you both have terminal software such as Hearsay. The simplest method is to make a voice call first (most people won't have a modem connected permanently on auto-answer on the offchance that someone might want to send a file). You can then either switch over to the modem while on line, or ring off and phone again having agreed that the recipient will leave the modem on auto-answer. You have to make sure that you are both using the same modem speed and file transfer protocol. Most modems these days can work out for themselves the highest speed at which they can communicate with each other, but you must set up your terminal software for the right protocol (Xmodem, Ymodem or Zmodem). Use the latter if possible, but switch to one of the others if you have problems with Zmodem.



A uuencoded file forming part of an E-mail message.

If one of the sites involved in the transfer has a phone line available on a regular basis specifically for modem use, you can set up a host system at that site, using a script file supplied with Hearsay and called unsurprisingly Host. This allows another user to dial in and upload or download files. This works very much like a bulletin board: you call the number, the modem answers, and

the host system runs the script file, which prompts for a password and then offers a menu of options. The system works best if the host machine is not used for other work while acting as a host.

Direct modem-to-modem transfer has its drawbacks of course. Unless you have a host system set up, both parties must be available at the same time, and if it's a long-distance call it could prove expensive with large files or slow modems (14,400 bps is really the minimum you should consider).

Luckily both these disadvantages can be overcome quite easily by using e-mail. This is rapidly becoming the way for computer people to communicate, as it can be used both for straightforward messages and for files. You don't necessarily need an Internet account to use e-mail - most bulletin boards can provide it, either by making use of their own Internet links or by connecting to a global e-mail network such as Fidonet. If you're a student, your college or university will almost certainly be able to give you an e-mail account. The beauty of e-mail is that you can send mail whenever it's convenient for you, and (usually) via a local call.

There is a catch, however. E-mail was devised in the days when the 7-bit ASCII character set was prevalent, and so e-mail is still handled by many systems as 7-bit ASCII. This is no use for binary files of course, so some method has to be found of translating 8-bit files to 7 bits. There are several of these, but one of the most widely used is a method known as uuencoding. Files to be e-mailed are passed through a uuencoder (many mail applications will do this automatically if a binary file is dropped onto them) and simply appended to an e-mail message. At the other end a uudecoder restores the original file. To transfer applications or multiple files in one message, you should archive them first (in fact, SparkFS will perform both uuencoding and uudecoding itself, making the whole process very simple). Unfortunately some mail readers seem to have a little trouble with long files and may corrupt uuencoded data from time to time - you'll just have to try out your own system to see what it can and can't do.

So which method is the best? It's horses for courses really. I've used all the methods described here, and apart from posting single floppies, which is fine for small non-urgent files, the method which has caused me the least grief is FaxPack - so how about a Risc PC version, CC? Please...

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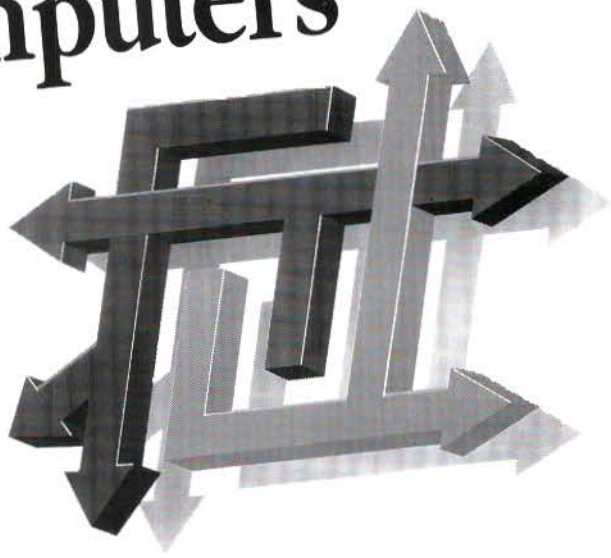

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Memory Management on the Risc PC

David Spencer looks at the improved memory management facilities offered by RISC OS 3.5

One major problem with early versions of RISC OS was the gradual 'memory rot' that occurred when many applications were run in succession. The problem is that the Relocatable Module Area (RMA), which is principally designed for storing modules and their workspace, is also used by applications to hold temporary data. What happens is that if an application needs a chunk of memory for some processing, it can claim it from the RMA and release it afterwards. This method works fine provided that no other application claims some more memory before the first one releases its chunk. If this happens then the first chunk, when freed, is left as an 'island' among used memory. This island can then only be re-used if a chunk of memory of the same size or smaller is claimed. Over a period of time the RMA grows and grows, and ends up looking like Swiss cheese with small unusable holes throughout it.

The **RMTidy* command is supposed to clean up the RMA by freeing all the chunks, and then reallocating them in a contiguous chunk. Unfortunately, this is a rather draconian approach from the point of view of the applications using the RMA, and many simply fail, including the Wimp itself. Indeed, in RISC OS 3.5, the **RMTidy* command doesn't even attempt anything - it simply returns immediately.

Enter Dynamic Areas

Instead, RISC OS 3.5 provides a wholly new approach to solving the memory rot problem by providing an alternative method of claiming chunks of memory. This new approach is to avoid using the RMA, and instead to allocate on request a private chunk of memory, known as a dynamic area, separate from the rest of the memory map. This is made possible because of the much greater address range offered by the ARM600 onwards. The memory claimed in this way is taken from the pool of free RAM, that is simply waiting in limbo to be allocated, and when released is returned to the free pool. Since each allocation results in a chunk of memory totally independent of any others, fragmentation is impossible. Under this scheme it is also easy for a chunk to grow and shrink as needed (provided of course that the RAM is available).

Another advantage of dynamic areas is that each one can be given a meaningful name which appears as a separate entry in the Task Manager display, making it easier for users to see where their RAM is being used. It is even possible for the user to change the size of a dynamic area by dragging its slider, if the application owning the area allows this.

As an example of a (non-changeable) dynamic area, look at the entry for the Wimp's sprite pool which appears at the bottom of the Task Manager display. If you have Longman's *PhotoBase* you can see how a resizable area works, since its *Image Cache* slider is draggable.

Using Dynamic Areas

RISC OS 3.5 provides a new SWI call, *OS_DynamicArea* (&66), to deal with the creation, deletion and housekeeping of dynamic areas. In the simplest case, when an application needs a fixed size block of memory for a certain period, it can use this call to claim the block, use it as needed (provided it was claimed successfully of course), and then release the block.

A slightly more complicated scenario is when the application owning the dynamic area wishes to change its size in mid-flow. This is done using the existing SWI *OS_ChangeDynamicArea*, which previously only operated in the system areas, such as the RMA and sprite areas.

An even more complicated situation occurs when the size of the dynamic area is changed independently of its owner, either by another program calling SWI *OS_ChangeDynamicArea*, or by

the user dragging the areas slider if this is permitted. In this case, it is fairly certain that the owner needs to know about the change, and also possibly to be able to block it, for example if the area was being shrunk to a size smaller than the data currently in it.

To allow for this to happen, when a dynamic area is created it is possible to assign to it a dynamic area handler which is called when the size of the area changes. To offer maximum flexibility, the handler is called both before and after the size change for both growing and shrinking operations. Obviously, before the size change has taken place the area's owner can object to it, whilst afterwards, the best it can do is adapt to the new size (for example by flushing cached data on an oldest first basis). When the dynamic area handler is called, it is passed either a workspace pointer or the base address of the area in question. Therefore, an application can have a single handler that deals with many dynamic areas.

Creating an Area

A dynamic area can be created using the call SWI *OS_DynamicArea* with register R0 set to zero, and the other registers set up thus:

R1 = -1 (or area number)
R2 = size of area
R3 = -1 (or logical address of area)
R4 = area flags
R5 = -1 or maximum size of area
R6 = pointer to handler routine (or 0)
R7 = pointer to workspace (or -1)
R8 = pointer to name of area

For most purposes, R1 should be set to -1, which requests that RISC OS generates a unique number for the area being created. This avoids any clashes between area numbers from different applications.

However, a specific area number can be requested by setting R1 to that number. Typically, this is used by RISC OS itself to maintain backwards compatibility, for example by allocating an area for the screen memory with area number 2.

Similarly, R3 should normally be set to -1 to allow RISC OS to choose the logical address in memory where the dynamic area will lie. The alternative is to provide a fixed address, but again this is offered so that RISC OS itself can achieve backwards compatibility with 'system' areas.

The value in R2 determines the initial size of the dynamic area, whilst R4 holds a set of flags that are detailed below. The value in R5 determines the maximum size the area will ever be allowed to grow to (by the methods mentioned above), with -1 meaning "grow until memory is full". R6 and R7 contain the address of the handler routine for the area (or zero if none), and the routine's workspace pointer respectively. Alternatively, R7 can be set to -1 to pass the base address of the area as a workspace pointer to the handler. Finally, R8 points to a null terminated string giving the area's name. It is this name that appears in the Task Manager display. On exit from the call, R1 and R3 are set up to contain the area number and the base address of the area respectively. At this point, the application can consider the area claimed and start using it.

The flags word in R4 contains a set of flags holding details of the dynamic area, allocated thus:

Bits 0-3 access privilege
Bit 4 1 => area is not bufferable
Bit 5 1 => area is not cacheable
Bit 6 1 => area is doubly mapped
Bit 7 1 => size cannot be dragged in Task Manager
Bit 8 1 => area may require specific physical memory
Bits 9-31 reserved

Note that several of these bits are inverted (in other words, setting the bits disables an action). The access privilege determines who can use the memory: 0 means that all code can access it, 1 means that it can only be read in user mode and not written to, and 2 means that it cannot be accessed at all in user mode. Bits 4 and 5 relate to the processor's cache and write buffer. Normally, both bits would be clear unless you wanted to inhibit cacheing to prevent the cache filling up with, say, RAM disc data. If bit 6 is set then the dynamic area created will actually appear in the memory map at two different (but contiguous) address chunks. This is needed for creating the screen area, and again is reserved for RISC OS itself. Setting bit 7 stops the user changing the size from the Task Manager (the safest bet), whilst bit 8 should be set if the owner of the area needs to be informed of the actual physical addresses assigned to the area. This information, which is passed via the area handler, is needed if any hardware DMA operations are going to be performed into or out of the area, and is beyond the scope of this article.

Deleting and Resizing an Area

Once created, the size of a dynamic area can be changed using SWI *OS_ChangeDynamicArea*. This takes two parameters: an area number in R0 and the amount by which to change its size (positive or negative) in R1. On exit, R1 contains the actual amount by which the size changed.

The current size of a dynamic area can be found at any time using SWI

OS_ReadDynamicArea, which takes an area number in R0, and returns the address of the area in R0, its current size in R1, and (if bit 7 of R0 is set on entry), its maximum allowable size in R2. There is also a reason code for *OS_DynamicArea* which allows more information to be found on an area, such as the address of the handler routine, and the area's name.

Once a dynamic area is finished with, it can be destroyed by calling SWI *OS_DynamicArea* with R0=1, and R1 containing the area number. The area will be deleted, and all its memory given back to the free pool for re-use.

It is also possible to enumerate all the dynamic area numbers by calling SWI *OS_DynamicArea* with R0=3, and R1=-1. On exit, R1 is updated to hold the first area number. Subsequent calls with R1 retained will return the following area numbers. These area numbers can then be passed to one of the information calls outlined above to find out details of the area, such as its name.

The Dynamic Area Handler

As already mentioned, the dynamic area handler, if used, is called before and after any size change. Explicitly, it is called with R0 set as follows:

0 Area about to grow
1 Area has grown
2 Area about to shrink
3 Area has shrunk

In each case, R3 is set to the amount by which the size will be, or has been, changed, and R4 is set to the size of the area at that instant. R12 is set to either the workspace pointer given when the area was declared, or the base address of the area if a workspace pointer of -1 was given.

The handler can return an error in the normal RISC OS manner from the 'about to grow' and 'about to shrink' calls, and this will prevent the changes from taking place. Additionally, when the area size is growing, the handler is passed information about the physical memory allocated to it, for DMA use, but again this is beyond the scope of this article.

Backwards Compatibility

Obviously, in the light of the arguments earlier, it is desirable to use dynamic areas wherever possible in an application, but on the other hand, many programs need to be written such that they will work on existing machines as well. The best way to achieve this is to write a central memory allocator/deallocator routine for an application which first tries to claim a dynamic area, and if this fails uses a chunk of RMA instead. On release, the routine obviously needs to use the route appropriate to the type of claim. In this way, the body of the application is presented with its chunk of memory, and not have to worry about where it came from.

And There's More

Finally, RISC OS 3.5 offers a number of other memory management enhancements over previous operating systems. For example, there is a call, SWI *OS_Memory*, to control and interrogate aspects of the memory system. Details of all these new features can be found in the Volume 5 supplement of the Programmer's Reference Manual, which is a recommended buy for any serious programmer.

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Using Dynamic Areas instead of the RISC User Memory Manager

One of the most popular programs we have published recently was the Memory Manager described in *Wimp Topics* (RISC User 7:5). Many readers are using these routines in their own programs. The Memory Manager works by claiming extra application workspace, creating a heap from this extra memory, and allocating chunks from the heap as and when the program requires them.

Increasing application workspace is still a valid method of claiming extra memory on the Risc PC, but for large amounts of memory it is less efficient, since it takes time to page all the application memory in and out at each Wimp poll. Also, the Memory Manager only implements a contracting heap and not a shifting heap, which means that you could still end up with the Swiss cheese effect within your own application workspace. If your programs are to run on a Risc PC, it is far better to use dynamic areas where possible.

It is very simple to modify your programs to do this. Instead of calling *FNallocate*, *PROCdeallocate* and *PROCalterblock* respectively to create, delete and modify a block of memory, you just use *OS_DynamicArea* or *OS_ChangeDynamicArea* to do the same thing as described above.

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1816	A440	4	40	3			460.00
1591	A440/1	4	40	3		D.Buffer	465.00
1503	A410	4	20	3		D.Buffer	470.00
1728	A420/1	4	20	3			470.00
1657	A410/1	4	47	3		D.Buffer	470.00
1623	A420/1	4	19	3	Y		480.00
1837	A410/1	4	40	2		D.Buffer	480.00
1844	A410/1	4	0	3	Y		485.00
1741	A410/1	4	0	3	Y		485.00
1499	A410	4	20	3	Y	D.Buffer	485.00
1629	A440/1	4	40	3	Y		495.00
1679	A420/1	4	40	3	Y		500.00
1638	A420/1	4	20	3	Y		500.00
1700	A410/1	4	20	3	Y		500.00
1732	A440/1	4	40	3			505.00
1795	A4000	4	80	3			505.00
1734	A410/1	2	19	3	Y	D.Buffer	515.00
1698	A420/1	4	70	3	Y		520.00
1770	A410/1	4	19	3		VIDC	525.00
1743	A420/1	4	40	3			525.00
1666	A420/1	4	20	3	Y		530.00
1764	A420/1	4	19	3	Y		545.00
1801	A440	4	40	3	Y	VIDC	545.00
1751	A410/1	4	40	3	Y		545.00
1339	A410/1	4	40	3	Y		545.00
1838	A400/1	4	20	3	Y		545.00
1768	A440/1	4	19	3	Y		545.00
1783	A440	4	47	3	Y	VIDC	565.00

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1829	A440/1	4	39	2			625.00
1789	A5000	4	0	3	Y		680.00
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Legend:

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Acorn C/C++

Thomas Down investigates Acorn's exciting new application development system

It is now well over three years since the release of Acorn's popular Desktop C package, the mainstay of many a programmer's toolkit. Now, however, the system has started to show its age, particularly when you consider the lack of RISC OS 3 support in the accompanying Wimp programming library. When, earlier this year, Acorn finally announced that a replacement was soon to be available I was eager to take a closer look. As the name suggests, not only does this package support the ever popular C language, but also the fashionable object oriented version, C++. In addition, it includes the latest version of the ARM object assembler, which was previously supplied as a separate package. But perhaps the most exciting element of all is the so-called toolbox, a set of modules which look set to revolutionise desktop programming.

The package is supplied in an attractive and well made cardboard slip case, which contains six discs and four manuals, together with a short set of release notes. The system requires RISC OS 3.1 to run, and hard disc installation is obligatory. Users of Desktop C will be pleased to find that it is now possible to install the system anywhere on your hard disc, rather than insisting on the root directory. Once installation is complete, a simple hypertext browser is run, showing a set of cards which explain the directory structure used by the system. The hypertext browser serves a double role, since it is also an example of toolbox programming, and complete source code is included.

The Compilers

The C compiler, like almost all the supplied tools, makes use of the same 'Frontend' system as Desktop C. This allows compiler options to be set up in a window before the compiler itself is started in a special task window. The compiler is an evolutionary development of that supplied with Desktop C, but Acorn claims that its optimising features have been improved significantly. The test results shown in figure 1 (using the standard Dhrystone 2.1 benchmark, running on a Risc PC with ARM 610) seem to confirm this.

Package	Compiler version	Dhrystones /second
Desktop C	4.00	32945
Acorn C/C++	5.05	39683
Increase		20.45%

Figure 1.
Run-time speed comparison between Desktop C (version 4) and C/C++ version 5.05

There is also a *!*C++ tool, but this is not a true compiler. Instead, Acorn have ported AT&T's *CFront* 3.0 C++ to C converter. This converts the C++ source to C source files, which are then passed to the C compiler in the normal way. This method is sometimes regarded as being inferior to a true compiler, but in this case it seems to work very well. The only major restriction is that C++ formal exceptions are not supported. These structures, which were added to the C++ standard by the ANSI authorities, can be useful, but have a reputation for being an implementer's nightmare, so their absence is not entirely surprising. An information sheet supplied recently to Clan members suggests that a true compiler, which will support exceptions, may eventually be available as an alternative, but no release date has been given.

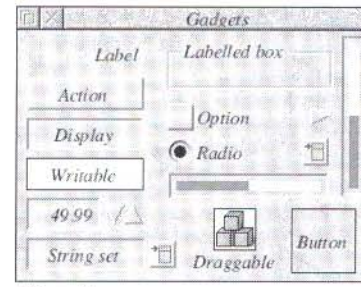


Figure 2.
A wide range of gadgets is available, and can be dragged into a window

C++ is a very popular language on other computer systems, although it is a recent arrival on Acorn computers (Beebug's *Easy* C++, a true compiler, was the first commercial Acorn package and is still available at £99 +VAT & carriage). It is an object oriented language, and many of its features have been introduced in recent issues of RISC User. Object oriented programming enthusiasts claim that this technique helps increase productivity, particularly as it can make code easier to re-use. It does, however, have some disadvantages, the most notable being the size of code produced. For instance, a simple "Hello world" program, written in C++ and using stream I/O takes up 24416 bytes, compared with 5380 bytes for a C equivalent using *stdio.h*, and although some of this difference is probably a constant overhead due to the additional run-time support required by C++, this is worth bearing in mind.

Other Tools

In addition to the C and C++ systems, the new package includes many of the same tools as Desktop C, although a few of the minor utilities,

such as the word count utility may be missed by some users. One old tool which few will regret the loss of is *FormEd*. This is replaced by an entirely new application called *ResEd*, which will be described in more detail later.

Some users will be surprised by the presence of *ObjAsm*, the program which formed the nucleus of the Desktop Assembler package. This has been upgraded since the previous version, and the new instructions supported by the ARM 6 and 7 series processors can be assembled. *AAsm*, a direct assembler which did not require linking of the output files, and which was also included in the old package, has been dropped, but this should not cause too many problems.

Windowing Support and the Toolbox

Until now, the standard approach to writing windowed applications in C has been to use the RISC_OSLib library supplied with Desktop C. This library does, unfortunately, have a number of limitations, especially when implementing a new Style Guide compliant design. More recently, a number of alternative libraries such as the freeware DeskLib package have appeared. Now, however, Acorn has produced an entirely new system to assist in the production of windowed front ends, not just for C programs, but also when working from Basic or even assembler.

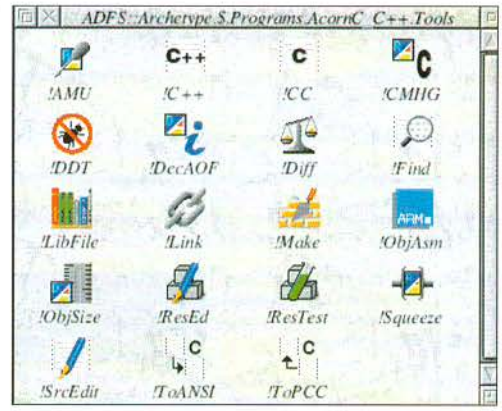
The core of the new toolbox is a set of relocatable modules which use the RISC OS 3 filter manager to install themselves between an application and the Window Manager (and for this reason an application constructed using the toolbox will not work on RISC OS 2). Together, they act as a new high level windowing system which greatly reduces the amount of code needed to implement standard user-interface designs. The modules are actually quite large (over 300K for the full toolbox and its support modules), and when a single application is being run, they can represent a significant overhead. Their use does, however, tend to make individual applications rather smaller, so in a multitasking environment the effect may not be as great as expected. Of course, this problem may be solved in the future if Acorn decides to include the modules in RISC OS 4 ROMs!

C++: the kit

The first stage in implementing a toolbox application is to design the user interface, using a new program called the Resource editor. This can be seen as a descendant of of FormEd, but instead of producing a *Templates* file, the end result is a so-called resource file. This includes an almost complete definition of an application's user interface, from the name of the icon bar icon to the keyboard short cuts recognised in the main editing window.

When building a new resource file, a whole range of object "prototypes" are available. Many of these objects are high level windows and menus: program info boxes, save dialogues and font list menus can all be added to your program with the drag of a mouse button. But even if you want to design a dialogue box or tool bar from scratch, you will find that matters have been simplified considerably. Instead of building a dialogue box from simple icons, ResEd's window editor section provides a palette of high level Style Guide compliant "gadgets", which can be dragged into your window and customised to your requirements. Each type of gadget has its own specific customisation window.

Like all windowed applications, toolbox programs are event driven, and centred around a "Wimp_Poll" loop. The toolbox delivers events to applications in a form that closely resembles a Wimp message, but toolbox events are differentiated by the use of a new poll reason code. There is a huge range of toolbox events which correspond to all sorts of circumstances, from a click on the icon bar icon to the completion of a slider drag. There is also a range of event codes which are left undefined, and you can specify in the resource file if you want one of these user events to be delivered instead of the default.



C++: the tools

All the facilities of the toolbox can be controlled from any language which allows SWI calls to be made, so it is directly relevant to Basic or assembler programmers. However, it is easiest to use from C, since veneer functions are

provided, which make calling the complicated toolbox SWIs easy. When writing in C, a special event handling library is supplied, which provides facilities similar to DeskLib's *Event* and *EventMsg* routines, but extended to support toolbox events.

There are some aspects of RISC_OSLib, such as the 'bbc style' graphics functions and flex memory management, which have no equivalent in the toolbox. My advice if you need these would be to use DeskLib, which provides equivalents to these missing bits without adding large overheads to the final code.

Conclusions

There can be no doubt that this is a superb product. During the time I have been using it, I have experienced no major problems. Although there is something of a learning curve associated with using the toolbox, I picked up the basics very quickly, and after only a few hours of experimentation I felt confident that I could use it to develop the user interface for a major application, and that I could do so significantly faster than if I were using conventional programming techniques, even considering that I have a significant library of useful user interface code fragments.

If all you need is a C compiler, and you already own Desktop C, I would find it very hard to justify the upgrade price to this new version unless you vitally need the speed improvement or support for the latest Style Guide features. However, this package provides very much more than just a C compiler. Most modern commercial software now runs on the desktop, and the use of the toolbox is bound to increase productivity significantly when writing desktop applications. The availability of C++ should lead to further productivity improvements, particularly when writing an application which is naturally object oriented in nature, as many large desktop editors are. As a result, commercial programmers should not be asking themselves whether they can afford to upgrade, but rather whether they can afford not to. For the amateur programmer the decision is less clear cut, but my experience suggests that anyone who writes windowed programs will enjoy using the toolbox.

My only real complaint concerns the availability of the toolbox to Basic programmers. Although the toolbox is relevant to users of this language, it can only currently be obtained as part of the C/C++ package. If Acorn wishes the toolbox to be used as widely as possible, it would make sense to release it as a separate package with a rather lower price.

C/C++

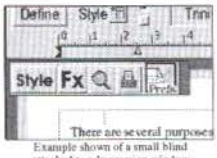
Supplier	**Acorn Computers Ltd**
Price	**£249.95 inc. VAT (£199.95 inc. VAT upgrade from Desktop C or Desktop Assembler)**

Full package and upgrades available from Acorn dealers (including Beebug).

"At last a truly professional Pinboard!"

Blinds is a new, easy to use and sophisticated 'Pinboard' type application which will make your life a whole lot more effortlessly when using your computer.

- Have blinds which snap open and close at the click of a mouse, therefore taking up *no* valuable desktop space.
- Give your icons long meaningful names at last!
- Change the icon displayed by choosing from over one thousand sprites we have provided.
- Set blinds to open automatically whenever your favourite application is loaded. You'll never have to look for that elusive file again!
- Make a blind which will attach itself to the side of your application, it will then follow your favourite program's window around the desktop just like it was made for it!
- Owners of *Keystroke* or *Impressive* can easily arrange their action icons onto a tool blind and make their own tool bars for their word processor, DTP or drawing program, etc.!



Example shown of a small blind attached to a Impression window.

"I think its great" - Geoff Preston, Acorn User Education Editor.
"It went straight onto my icon bar!" – Alan Wrigley, Risc User Editor.

If you own Computer Concepts Impression Style, Publisher (Plus) then you'll find **Impressive** a genuinely useful addon. **Impressive** is an easy to use button bar utility which will increase the productivity of your DTP work therefore saving you time and money. It comes set up ready to use with over 80 different icons which when clicked upon will make Impression® perform its functions fast and accurately.

From being able to colour a frame/border or text from over 200 CMYK predefined colours to being able to group and ungroup frames at the click of an icon, **Impressive** offers you fast and easy access to many of Impressions functions from a simple to use button bar.

Here are just some of the functions **Impressive** can do at the click of an icon :
Make a frame transparent/opaque, embed your favourite Sprites or Draw files into your text at the click on a mouse, fit a graphic to a frame, nudge a frame, rotate a graphic in preset amounts. Colour a frame or border or text from a huge selection of over 200 CMYK colours, set text repel of a frame on/off at the click of an icon or set it to preset amounts.
Set preset typesetting options of dpi, screen angles, etc. Select a border number - turn a frame's border to one of your choice quickly and easily. Create a specific type of frame, if you want a frame to be transparent, a particular size, colour, border type with text repel on, you can do it!

Also **Impressive** allows most of these functions to be easily tailored to your own special requirements. For example, if you want a frame to be created with all round text repel of 0.6mm, you've got it! If you want a frame to be 20x30mm, coloured blue with the borders set to #10, you can set it to do that too! Nudge a frame into position by 0.1mm, 0.5mm or 2mm, you decide! **Impressive** allows full customisation to the Button Bar, you can remove, rearrange or add any of its functions. The Button Bar that is supplied with **Impressive** can even launch your favourite applications, it can also be configured to appear horizontal or vertical and can be altered to hold 2 to 100 icons if you wish!

Blinds is offered at a introductory price of only £19.95. *Impressive* costs only £9.95. Postage and packaging is an extra £1.00 within the U.K. of either items (£2.00 outwith the U.K.). No V.A.T.
Blinds or *Impressive* requires RISC OS 3.10 or better. A demonstration disc of Blinds is available free of charge on receipt of a A5 size SSAE. You'll find *Blinds* or *Impressive* is available from all good Acorn software dealers including **BeeBug Ltd** or direct from :
Quantum Software at 35 Pinewood Park, Livingston, EH54 8NN, Scotland. Tel/Fax : 01506 - 411162

REGISTERED DEVELOPER

PC Matters - Memory Problems

by er... whatisname... erm, Alan Bonsor

Welcome to *PC Matters*, a new series that will guide you over or around the wide variety of obstacles that you may stumble across when delving into the PC world. Although the main catalyst for this series is the fact that many Risc PC owners are now taking delivery of their shiny new 486 co-processor cards, you should not feel left out if you use any of the other PC cards or software emulators, PC Soft and FasterPC included. This series is for all of you who use, or want to use, PC software on any RISC OS computer.

In this issue I will focus on what is probably the most confusing and difficult area of PCs to understand and get to grips with - memory.

There is a plethora of different terms - conventional, expanded, extended, upper, high, UMB, HMA, EMS, EMM, HIMEM, virtual, etc. You need to use 'memory managers' to access different types of memory. Certain programs can only be loaded into specific areas of memory. Some programs don't work if you have the wrong memory setup. And what types of memory do the various PC cards and PC emulators support?

In order to understand PC memory, you need to know something about the history of 80xxx family of processors. So, once upon a time...

Conventional and Upper Memory

Long ago in the early years of the 80s, when world domination was just a glimmer in Bill Gates' eyes, most PCs used the 8088/8086 or 80186 processors. These processors were designed to cater for no more than 1Mb memory, with the lower 640K RAM, known as the conventional memory, allocated to the operating system and programs, and the remaining 384K, the upper memory, being available for the BIOS and screen memory. The two PC emulators, David Lawrence's FasterPC and Acorn's PC Soft, emulate these processors and thus share the same memory limitations.

Expanded Memory (EMS)

If you had a program which required more than 640K of RAM and you wanted to run it on an 8088/8086 or 80186 system, you needed to use a memory expansion card which would plug into one of the PC's expansion slots. The RAM on this expansion card, known as expanded memory, could not be accessed directly by the program or the operating system. Instead, as and when the program requested it, a utility called an expanded memory manager would copy the necessary data from the expanded memory into an upper memory block (UMB) called an EMS Page Frame.

In order to enable as many programs as possible to make use of expanded memory, an expanded memory specification (EMS) was drawn up by Lotus, Intel and Microsoft. Two versions of this specification are in use: The earlier LIM EMS 3.2 and the newer LIM EMS 4.0. Different memory expansion cards require their own memory managers, usually supplied by the cards' manufacturers.

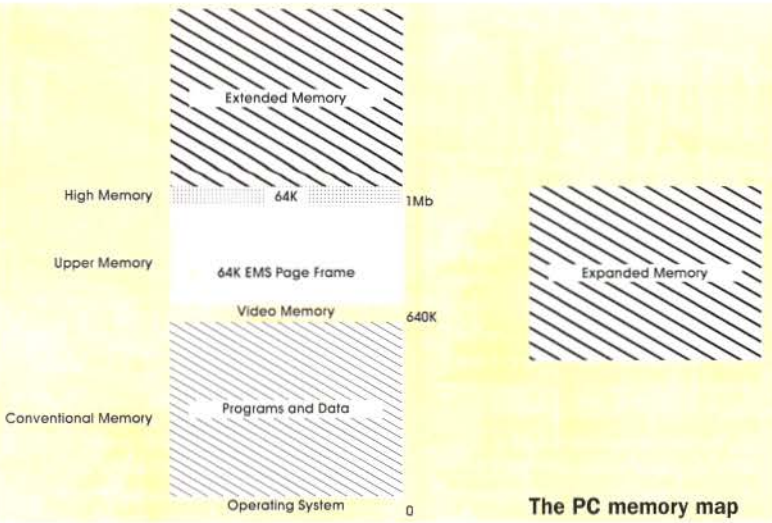
FasterPC and PC Soft can use any RISC OS memory above the bare minimum that they require, to simulate expanded memory. Both emulators are supplied with their own LIM EMS 3.2 compliant expanded memory managers, FPCEMS.SYS and EMS.SYS respectively, which allow up to 8Mb of RISC OS RAM to be used as expanded memory. How to install these drivers is examined later in this article.

Extended Memory (XMS)

With the introduction of the 80386 and 80486 processors - the processors used by the various PC cards - the 1Mb barrier was broken. It now became possible to add more memory by simply plugging in extra RAM chips or SIMMs, in much the same way as Risc PC memory can be extended. This extra memory is known as extended memory, with the bottom 64K of it called the high memory area (HMA). As with expanded memory, programs that want to make use of extended memory must do so through a memory manager. Unlike expanded memory however, you do not need to use different memory managers for different memory chips or SIMMs. The standard extended memory manager, HIMEM.SYS, is supplied with MS-DOS and PC-DOS. Just to confuse the issue, DR-DOS, supplied with certain versions of PC Soft, does not make use of HIMEM.SYS to manage extended memory. It uses instead an enhanced version of EMM386, described below.

What about the 80286? The 80286 processor supported up to 16Mb extended memory. At the time of its release however, DOS did not.

Because extended memory arrived on the scene later than expanded memory, many programs that were written to take advantage of expanded memory are unable to be used with extended memory on 80386 or newer systems. To overcome this problem it is necessary to use an Expanded Memory eMulator called



The PC memory map

EMM386.EXE. This uses extended memory to simulate expanded memory. EMM386.EXE is supplied with MS-DOS and PC-DOS. DR-DOS comes with EMM386.SYS which performs the same functions as EMM386.EXE, in addition to doing everything that HIMEM.SYS does. Both EMM386.EXE and EMM386.SYS make it possible to load programs and device drivers into the upper memory area and/or the high memory area, thus freeing conventional memory for programs.

Neither HIMEM.SYS, EMM386.EXE nor EMM386.SYS can be used with FasterPC or PC Soft as they all require an 80386 or newer processor.

Attempting to use HIMEM.SYS with FasterPC or PC Soft will cause the following error to occur:

```
ERROR: HIMEM.SYS requires an 80x
86-based machine.

       XMS Driver not installed.
```

Using EMM386.EXE or EMM386.SYS with FasterPC or PC Soft will cause both applications to crash.

Installing the FasterPC and PC Soft Expanded Memory Managers

FPCEMS.SYS is supplied on the FasterPC MS-DOS support disc in the UTILS directory. You will need to copy it onto your boot disc, either drive C if you have a PC partition on your hard drive, or onto the disc you normally put in the disc drive when you run FasterPC. You now need to add the following line to the beginning of your CONFIG.SYS file:

```
DEVICE=C:\DOS\FPCEMS.SYS
```

EMS.SYS, the PC Soft memory manager, should be copied onto your boot disc in the same way as for FPCEMS.SYS, and the following line added to the beginning of your CONFIG.SYS file:

```
DEVICE=C:\DOS\EMS.SYS
```

In both the above DEVICE commands, change the C: to A: if you boot from floppy disc.

Installing HIMEM and EMM386 with your PC Card

Both HIMEM and EMM386 are supplied with DOS, and the Setup programs that come with the more recent versions of DOS will automatically install them for you. If you need to install them manually, simply add the following two lines to the start of your CONFIG.SYS file:

```
DEVICE=D:\WINDOWS\HIMEM.SYS
DEVICE=D:\WINDOWS\EMM386.EXE
```

EMM386 can be configured to provide different amounts of expanded memory. The easiest way to do this is to run MS-DOS 6.2's MEMMAKER utility, or PC-DOS 6.3's RAMBOOST.

I will be looking at another aspect of PC usage in next month's RISC User.

Terminology

Conventional memory: the memory from 0 to 640K used for DOS and programs.

Upper memory: the memory between 640K and 1Mb, used as video memory, by the BIOS, and for providing upper memory blocks (UMBs), also known as frames, used by expanded memory managers.

Expanded memory: memory supplied on a dedicated memory expansion card, with each card requiring its own memory manager.

Extended memory: memory above 1Mb which can only be used with 80386 and newer processors; a DOS memory manager makes it available to programs that use it.

High memory: the high memory area (HMA) is the first 64K of extended memory, i.e. the first 64K above 1Mb.

HIMEM.SYS: the Extended Memory Manager which allows programs to access extended memory on 80386 and newer processors. It conforms to the Lotus/Intel/Microsoft eXtended Memory Specification (LIM XMS) version 2, and is supplied with MS-DOS and PC-DOS.

EMM386.EXE: not, as one might deduce from its name, an Extended Memory Manager. EMM386.EXE is the Expanded Memory eMulator and uses extended memory to simulate expanded memory. This allows programs that pre-date the 80386 and use expanded memory to run on systems with only extended memory. EMM386.EXE currently conforms to LIM EMS 4.0, and is supplied with MS-DOS and PC-DOS.

EMM386.SYS: a combined version of HIMEM.SYS and EMM386.EXE supplied only with DR-DOS.

Wimp Topics - Fancy Error Boxes

Graham Crow describes a useful enhancement to your desktop

The standard error box provided by the Window Manager (see Figure 1) has some shortcomings: - the text often wraps awkwardly; - action buttons are limited to *Cancel* and/or *OK* and no longer conform to the Style Guide; - the word "Cancel" is confusing, since it normally kills the task; - you cannot move the window (which often obscures the error you wish to examine!).

FNmsg() is a Basic function which overcomes these problems and provides an attractive and flexible error box to cope with both messages and program errors. Figure 2 shows how Figure 1 might look using *FNmsg*.

The standard Wimp error box with all its shortcomings.

As far as possible the code is self-contained so that it can be included in your own programs without difficulty. However, it does need to interact with your program at various points, as described below. On this month's magazine disc is an application called *ErrorBox* which contains all the code necessary for you to use the routines in your own programs. There is also a test window from which you can try out message and error reporting.

FNmsg() is listed in full in listing 1 later. It takes four parameters:

```
 - title$   the window title (up to 50
characters);
 - message$ up to three lines of 50
characters, comma separated;
 - action$  up to four buttons of 10
characters, comma separated;
 - sound%   volume of beep from 0 (no
beep) to 15 (max beep).
```

Using FNmsg in your own programs

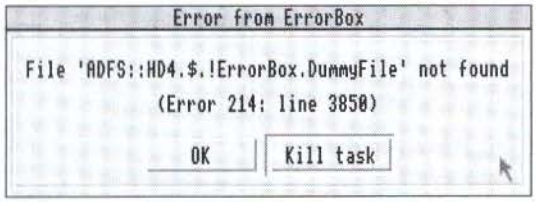
Before dealing with the error routines, let's look at the other bits of code you need to include. First, you need to set *task$* to the name of your program. Then, in your initialisation routine, you need to DIM some space for use in *FNmsg*, and initialise four variables, as follows:

```
DIM errblk% &100
DIM icm$(3),ict$(4),a% 250
DIM icm%(3),icn%(4),icv%(4)
FOR J%=0 TO 2
  icm%(J%+1)=a%+50*J%
NEXT:a%+=150
FOR J%=0 TO 3
 icn%(J%+1)=a%+15*J%
NEXT
FOR J%=0 TO 3
 icv%(J%+1)=a%+10*J%
NEXT
DIM icx%(4),icy%(4),icw%(4),ich%(4)
reply%=0:escape%=FALSE
return%=FALSE:dragmsg%=FALSE
```

Next, you must include the template *Message* in your program's template file and use *PROCloadtemplates* to load it along with any other templates. The template needs to be at least 268 OS units deep, and wide enough to hold 52 characters. For the system font this means around 836 OS units, but for outline fonts you may well need a wider window, or alternatively restrict the length of the messages that will be displayed. The window needs to contain 9 icons: icon 0 is a border icon, as shown in figure 2; icon 8 is a writable icon of any shape positioned outside the visible area, which enables the message box to act on keypresses; the other icons can be dummies of any shape and size since these are recreated as required by *FNmsg*. The routine assumes that the handle of this window is in *messwind%*.

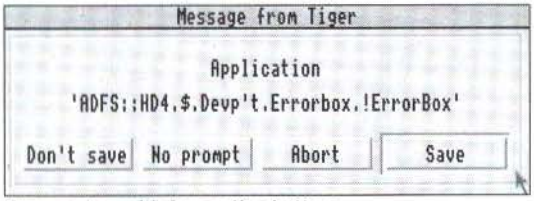
You need a procedure *PROCnull* which is called from your poll loop on receipt of null reason codes, and also *PROCstartdrag* and *FNosmax*. These are listed in listing 2.

You need to react to mouse clicks on the error window. Your procedure which handles mouse clicks should set *reply%* to the number of the action button clicked, and (if the mouse button is 16 or 64, indicating a drag) make a call to *PROCstartdrag*. Your keypress handler should set the flags *return%* or *escape%* if the corresponding keys are pressed.



Implementing an error more neatly with ErrorBox.

In order for the message window to be draggable *PROCstartdrag* includes code to deal with our window. This in turn calls *FNosmax* to get the current maximum screen coordinates so that the drag is confined to the screen. A drag type of 1 is used, which means that the Wimp handles it all automatically and we don't need to detect the end of the drag, as with user drag types. However, to act as an error box the pointer must be confined to the window wherever it is, so the flag *dragmsg%* is set to tell *PROCnull* that it needs to check whether the mouse buttons have been released, and to confine the pointer to the current position of the window if this is the case.



An error box with four action buttons.

The value returned by *FNmsg* will be zero if Escape is pressed, or a value from 1 to n where n is the number of action buttons in the window. The left-most action button is 1, while the right-most icon has the highest value and is also the default action button, i.e. pressing Return gives the same value as clicking on this icon.

It is recommended that your normal Wimp error routine (which is assumed here to be called *PROCwimperror*) is extended with a parameter which determines whether *FNmsg* is called or whether the normal Wimp error reporting system is used. This parameter could be set to 1 for *FNmsg* and 0 for the standard method. This is because if an error occurs within *FNmsg* you must be able to use the normal Wimp error reporting mechanism, otherwise the system would hang. See the next section for how this is done.

How FNmsg works

FNmsg(title$,message$,actions$,sound%) starts by setting LOCAL ERROR. This is so that if an error occurs within the function *PROCwimperror* can be called with zero as the parameter, resulting in the standard error box, as described above.

The function proceeds to close any open menus, stop the hourglass, and so on. If your program has open files you may want to close them specifically at this point (but never use *Close!). Next, the three message and four button icons are deleted and then re-created according to *action$* and *message$*. The formatting is calculated to position the icons correctly. Now the window is opened with the pointer confined.

The Wimp poll is then entered to allow dragging and other Wimp operations to take place. The loop is exited when an action button is clicked or Escape or Return is pressed. At this point the error window is closed and the appropriate value returned.

This should give you all the information you need to liven up your error boxes. If you need further help, a complete example application is included on this month's magazine disc, which you can study to see how the complete application fits together.

Listing 1

```
 1000 DEFFNmsg(title$,message$,actions$,
sound%)
 1010 LOCAL J%,c%,p%,g%,x%,y%,w%,h%,n%,l
%,b%
 1020 LOCAL r%,t%,maxi%,s$,wh%
 1030 LOCAL ERROR:ON ERROR LOCAL PROCwim
perror(0):=0
 1040 wh%=messwind%
 1050 SOUND 1,-sound%,50,4
 1060 $messtit%=title$
 1070 SYS "Wimp_DragBox",,-1
 1080 SYS "Hourglass_Smash"
 1090 SYS "Wimp_CreateMenu",,-1
 1100 :
 1110 REM delete icons...
 1120 errblk%!0=wh%
 1130 FOR J%=1 TO 7
 1140  errblk%!4=J%
 1150  SYS "Wimp_DeleteIcon",,errblk%
 1160 NEXT
 1170 :
 1180 REM create action button icons
 1190 c%=0:s$=actions$
 1200 REPEAT
 1210  c%+=1:p%=INSTR(s$,",")
 1220  IF p%=0 ict$(c%)=s$
 1230  IF p%>0 ict$(c%)=LEFT$(s$,p%-1):s
$=RIGHT$(s$,LENs$-p%)
```

```
 1240 UNTIL p%=0 OR c%=4
 1250 maxi%=c%
 1260 CASE c% OF
 1270  WHEN 1:x%=312
 1280  WHEN 2:x%=222
 1290  WHEN 3:x%=128
 1300  WHEN 4:x%=28
 1310 ENDCASE
 1320 y%=-228:w%=178:h%=52:v$="R5,2"
 1330 errblk%!0=wh%:errblk%!20=&1701313D
 1340 errblk%!32=20
 1350 FOR J%=1 TO c%
 1360  IF J%=c% y%-=6:w%+=32:h%+=12:v$="
R6,2"
 1370  $icn%(J%)=LEFT$(ict$(J%),10)
 1380  $icv%(J%)=v$:n%=icn%(J%):v%=icv%(
J%)
 1390  errblk%!4=x%:errblk%!8=y%
 1400  errblk%!12=x%+w%
 1410  errblk%!16=y%+h%:errblk%!24=n%
 1420  errblk%!28=v%
 1430  SYS "Wimp_CreateIcon",,errblk% TO
 i%
 1440  x%+=w%+12
 1450 NEXT
 1460 :
 1470 REM create icons for message text
 1480 c%=0:s$=message$
 1490 REPEAT
 1500  c%+=1:p%=INSTR(s$,",")
 1510  IF p%=0 ict$(c%)=s$
 1520  IF p%>0 ict$(c%)=LEFT$(s$,p%-1):s
$=RIGHT$(s$,LENs$-p%)
 1530 UNTIL p%=0 OR c%=3
 1540 CASE c% OF
 1550  WHEN 1:g%=48:y%=-120
 1560  WHEN 2:g%=54:y%=-84
 1570  WHEN 3:g%=48:y%=-68
 1580 ENDCASE
 1590 x%=30:w%=774:h%=40
 1600 errblk%!0=wh%:errblk%!4=x%
 1610 errblk%!12=x%+w%
 1620 errblk%!20=&17006139:errblk%!28=-1
 1630 errblk%!32=20
 1640 FOR J%=1 TO c%
 1650  $icm%(J%)=RIGHT$(ict$(J%),50)
 1660  n%=icm%(J%)
 1670  errblk%!4=x%:errblk%!8=y%
 1680  errblk%!16=y%+h%:errblk%!24=n%
 1690  SYS "Wimp_CreateIcon",,errblk% TO
 i%
 1700  y%-=g%
 1710 NEXT
 1720 :
 1730 REM open window, confine and posit
ion pointer
 1740 errblk%!0=wh%
 1750 SYS "Wimp_GetWindowState",,errblk%
 1760 errblk%!28=-1
 1770 SYS "Wimp_OpenWindow",,errblk%
 1780 SYS "Wimp_SetCaretPosition",wh%,8,
0,,-1,-1
 1790 SYS "Wimp_GetPointerInfo",,errblk%
 1800 w%=errblk%!12
 1810 errblk%!0=wh%
 1820 SYS "Wimp_GetWindowState",,errblk%
 1830 l%=errblk%!4+16
 1840 b%=errblk%!8+20
 1850 r%=errblk%!12-errblk%!4-32
 1860 t%=errblk%!16-errblk%!8-36
 1870 MOUSE RECTANGLE l%,b%,r%,t%
 1880 IF w%<>wh% MOUSE TO errblk%!12-24,
errblk%!8+24
 1890 :
 1900 REM wait for click on reply icon,
or Esc or Ret pressed
 1910 reply%=0:escape%=FALSE
 1920 return%=FALSE
 1930 REPEAT
 1940  PROCpoll
 1950 UNTIL (reply%>0 AND reply%<maxi%+1
) OR escape% OR return%
 1960 IF return% reply%=maxi%:REM defaul
t
 1970 errblk%!0=wh%
 1980 SYS "Wimp_CloseWindow",,errblk%
 1990 OSCLI("Pointer"):REM de-restrict p
ointer
 2000 =reply%
```

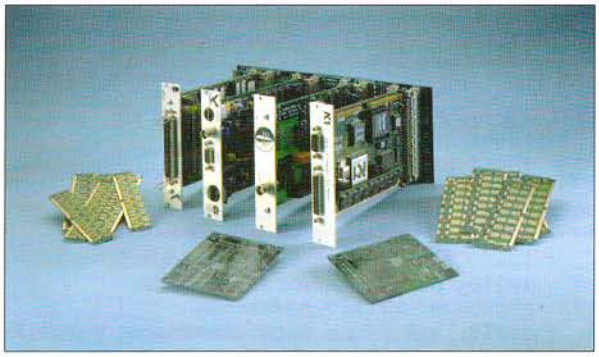
Listing 2

```
10000 DEF PROCnull
10010 REM confine pointer to error windo
w following drag
10020 SYS "Wimp_GetPointerInfo",,q%
10030 mb%=q%!8
10040 IF dragmsg%=TRUE AND mb%=0 THEN
10050  dragmsg%=FALSE
10060  errblk%!0=messwind%
10070  SYS "Wimp_GetWindowState",,errblk
%
10080  l%=errblk%!4+16
10090  b%=errblk%!8+20
10100  r%=errblk%!12-errblk%!4-32
10110  t%=errblk%!16-errblk%!8-36
10120  MOUSE RECTANGLE l%,b%,r%,t%
10130 ENDIF
10140 ENDPROC
10150 :
10160 DEF PROCstartdrag
10170 q%!4=messwind%
10180 SYS "Wimp_GetWindowOutline",,q%+4
10190 q%!0=messwind%:q%!4=1
10200 xos%=FNosmax(4):yos%=FNosymax(5)
10210 q%!24=0:q%!28=0
10220 q%!32=xos%:q%!36=yos%
10230 dragmsg%=TRUE
10240 SYS "Wimp_DragBox",,q%
10250 ENDPROC
10260 :
10270 DEFFNosmax(a%)
10280 LOCAL limit%,eig%
10290 SYS "OS_ReadModeVariable",-1,a%+7
TO ,,limit%
10300 SYS "OS_ReadModeVariable",-1,a% TO
 ,,eig%
10310 =(limit%+1)<<eig%
```

The Atomwide Multi-slot Backplane Kit

by Alan Bonsor

Right - your Risc PC is bulging with SCSI, LaserDirect, Eagle M2 and network expansion cards, and you've just purchased an MPEG player. In addition, what with the CD-ROM, SyQuest and SCSI hard drives, there are no empty bays in which to install your new Nikon Coolscan.

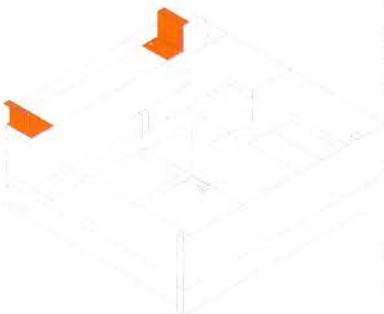


You have a choice. You can either dump one of the expansion cards and rustle up an external power supply unit and case for the Coolscan, or, and this is definitely the way to win friends and influence people, you can turn your Risc PC into a Canary Wharf look-alike by adding a couple more slices and a 6 or 8-slot expansion backplane.

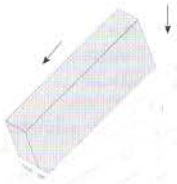
Acorn currently supply three variants of the Risc PC. ACB15 and ACB25 are single slice Risc PCs with 2-slot backplanes, whilst ACB45 is a 2-slice system with a 4-slot backplane. Another difference between the systems is that while ACB15s and 25s have low output power supplies, catering for only two hard drives, the ACB45's high output power supply provides four hard drive connectors.

If all you want to do is turn an ACB15 or 25 into an ACB45, you will need Acorn's ACM01 4-slot backplane upgrade. The reason why this is an Acorn rather than a third party kit is that it comprises standard ACB45 components - a slice, a 4-slot backplane circuit board, an ACB45 high output power supply which replaces your existing one, and 4 plastic locking rods.

If you want to add more than two slices to your Risc PC, you need Atomwide's customisable *Multislot Backplane Kit*. This kit provides several ways for you to expand your Risc PC. It consists of the following components:



Mounting the brackets for the second power supply unit.



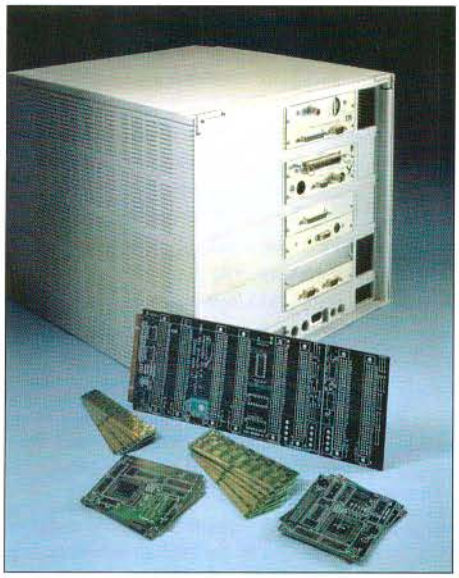
Installing the extra power supply in the second 'open' slice.

- a 6 or 8 slot backplane circuit board
- a second ACB45 high output power supply
- 2 power supply brackets
- 4 power supply screws
- 2 front and 2 rear locking rods
- a power lead and a mains cable
- up to 5 open or closed slices

The slices and power supply are standard Acorn parts which Acorn supplies to Atomwide, while the backplane, locking rods and brackets have been developed by Atomwide itself. Although Atomwide can supply locking rods to support 5 and 6 slice Risc PCs, it doesn't have any plans to develop 10 and 12-slot backplanes.

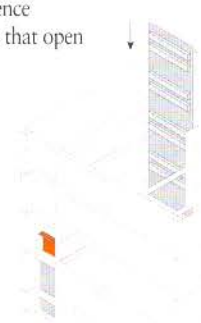
Open or Closed, Sir?

You will probably have noticed my reference to 'closed' and 'open' slices. If you have an ACB45 you will know that the 3.5" drive bay on the top slice is well and truly sealed, requiring a drill, hacksaw and a lot of patience to breach. Examine the back of the top slice and you will discover that the power supply connector socket is also sealed, which doesn't matter with the ACB45 because the power supply is in the bottom slice.



The top slice is thus called a 'closed' slice, while the bottom slice, with its open drive bay and power socket, is an 'open' slice.

Another difference between the two is that open slices are not electrically (EMC) screened to prevent the computer from interfering with radio or television signals. You can tell whether a slice is screened or not by its inside colouring. If the inside is the same colour as the outside, it's not screened. Although this is not a problem for the British market, it may be a problem for European and American/Canadian users.



Inserting an 8-slot backplane. Note that the top two slices are closed.

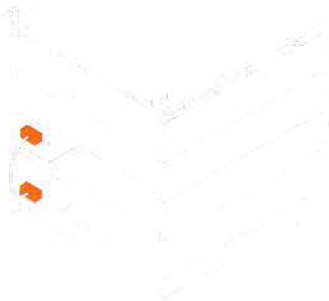
What do you Require?

If you want to fit extra expansion cards, you will need to purchase the entire kit: second power supply, backplane, locking rods, and one, two or three slices depending on whether you're upgrading from an ACB15/25 or ACB45.

If all you require is one or two extra drive bays for hard drives etc., and you don't envisage adding more expansion cards, you can simply purchase an additional slice for £30 ex. VAT. Unfortunately, you will need to add another £30 to this for the four metal locking rods. As these rods are totally unique to the Acorn world, Atomwide has had to get them specially manufactured. Of course, if Atomwide knew that it would sell several thousand upgrades, the rods would probably be £3 for the set. This is not really the best route to follow however. You will need to use power cable splitters in order to power the additional drives, and will probably end up overloading your power supply. It will also cost you considerably more in the long run when you decide that you want to add more expansion cards.

When you purchase the Multislot Backplane kit, you will, unless you tell Atomwide otherwise, receive the 'standard' kit. This comes with one open slice for the power supply and a SyQuest for example, and the rest of the requested slices closed, in addition to the power supply/backplane kit.

What happens if you have an extra hard drive for which you don't want an open drive bay, but you do need the second power supply which requires an open slice? Atomwide will supply on request a closed slice instead of an open slice. You will then have to operate on the power supply socket with a hacksaw yourself. In the same way, if you need open slices for several disc, SyQuest or magneto optical drives, tell Atomwide and they'll supply open instead of closed ones.



Attaching the second power supply to the base power supply.

Installation

Installing the 6 or 8-slot backplane upgrade is a very simple exercise and should take no more than a couple of minutes. Unfortunately it's not a totally screwdriverless operation - well you don't want a power supply flapping around loose in your system, do you?

The process involves removing all but the bottom slice from your Risc PC, as well as the exisiting 2 or 4-slot backplane. You then need to remove two screws from the top of the base power supply and attach the metal brackets which will hold the second power supply. You then mount one open slice on the base slice and attach the second power supply to the brackets. You need to ensure that the second power supply's on/off switch is in the 'on' position before you mount it, as you can't reach the switch once it's installed (nor do you

need to). Following this you add the rest of the slices, installing any drives as you go along, insert the new backplane and attach to it a cable from the second power supply to power the top 2 or 4 slots.

Before adding each slice, it is highly advisable to route all power or data cables up through the appropriate sections of the slice. Otherwise you may end up attaching all the slices and the backplane only to discover that the power and data cables are totally inaccessible. It is also very much easier to insert the backplane card before attaching the top slice.

PRODUCT INFO

ACM01	Acorn 4 slot backplane upgrade (ACB15/25 to ACB45)	£116.33
2 to 6 BP	ACB15/25 to 6 slot backplane kit	£316.08
2 to 8 BP	ACB15/25 to 8 slot backplane kit	£351.33
4 to 6 BP	ACB45 to 6 slot backplane kit	£257.33
4 to 8 BP	ACB45 to 8 slot backplane kit	£316.08
Individual items		
2nd PSU	2nd power supply	£52.88
Close Slice	Closed 3.5" Acorn single case slice	£35.25
Open Slice	Open 3.5" Acorn single case slice	£35.25
xslice-bolt	Machined bolts (for 3, 4, 5, or 6 slices)	£35.25/set

Supplier
Atomwide
7 The Metro Centre
Bridge Road
Orpington
Kent BR5 2BE
Tel. 01689 814500
Fax 01689 814501
Email sales@atomwide.co.uk

Reinstall all your expansion cards in the correct slots (see below), insert the front locking rods, attach the cover to the top slice, insert the rear locking rods, and the process is complete... almost.

The top power supply must be attached to the base supply via a supplied cable. This means that you can no longer power your monitor from the computer. Atomwide does however supply a mains cable for the monitor so it's not that much of a problem. Atomwide claims that the reason for powering the second supply from the first is that the computer and the expansion cards must be turned on at the same time. If the expansion cards are powered separately, then turning them on after the computer could have the same effect as inserting or removing them whilst the computer is turned on.

With both power supplies installed you will have a total of 8 power cables for hard drives, CD-ROMs, etc, and 2 cables for disc drives. With judicious use of cable splitters you could probably power a couple more hard drives without causing a system meltdown. If you ever did reach this stage it would be most sensible to install a third power supply anyway.

Which Slots?

For some expansion cards, it's important that they're installed in the correct slots. Only the bottom two slots support DMA (direct memory access) transfer. This means that certain cards that support DMA transfer, e.g. some SCSI and network cards, will only perform at their best when attached to these slots. When used with other slots their speed of operation may be substantially affected.

Once you have installed everything and the desktop appears when you turn the computer on, you can check that the backplane is working by pressing F12 and typing *Podules at the command line. If you have a card installed in one of the top slots, its details should appear in the podule list. Other than the extra height of your computer, the only external difference you will notice is that you have two metallic keys on the top of the cover. Whatever happened to colour coordination?

Techies Corner

It's quite amusing to learn that the 6-slot backplane is simply an 8-slot backplane to which a hacksaw has been applied. It was designed with this in mind however, so no tracks or components are damaged when the card is cut down to size.

The backplane card is a six layer PCB with a gold plated edge connector. The two inner layers deal with DMA signals, the next two layers contain the power and ground tracks while the outer layers are for the left-overs. Both the 6 and 8-slot backplanes need to be connected to the second power supply in order to supply juice to the top 2 or 4 slots respectively.

DMA support is normally only provided by the bottom two slots. It is possible to move DMA support to other slots by changing the pin links on the backplane, but you should not attempt to do this unless you know exactly what you're doing. If you start to adjust the jumpers, the backplane becomes non-standard and your Risc PC may even stop working. According to Atomwide, the jumpers provide scope for future improvements to the DMA structure on the card, allowing for example, expansion cards with more than one channel of DMA - i.e. a combined SCSI and ethernet card. Atomwide's advice about the jumpers is this: they are unlikely to be very sympathetic to you if you cause your system to die by fiddling with the links. You have been warned.

The only problem that you may come across when using a 6 or 8-slot backplane is with cards that have cables that attach directly to the computer's motherboard, e.g. Eagle M2, Aleph One PC podule, etc. You may find that with the card in a higher slot, the cable is too short to reach the motherboard. This is not an insurmountable problem: if you can't put the card in a lower slot then it's not difficult to make up a longer cable.

Bubbles, Strokes, Maps and Protection Rackets

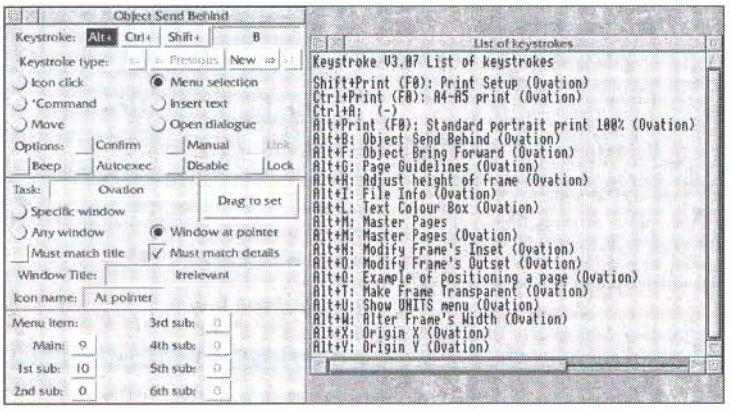
Our reviewers round up some recent products and put them through their paces

Keystroke

by Colin Murray

I first reviewed Quantum Software's *Keystroke* back in RISC User 6:10. Since then the program has been updated (the current version is 3.07), and so RISC User asked me to have another look at it. Keystroke allows you to build sequences of commands, mouse clicks etc., and assign a keypress to carry out the sequence. This opens up an enormous range of possibilities for condensing frequently used sequences of actions, or automating repetitive tasks. If you regularly use some obscure feature of a package that normally requires several menus to be opened followed by a selection from a dialogue box, it's quite impressive watching Keystroke do it all for you from a single keypress.

particular application. The library contains definition files for many applications including the Filer, Impression, Ovation, Pipedream4, Draw, Paint etc. By including a line in the application's !Run file, the key definitions file can be loaded at the same time as the application, making the keypresses instantly available. For example, if you load the Ovation key definitions file, you can then use Alt-B to send an object behind, Alt-T to make a frame transparent, Alt-M to show the master page, and so on. If you use Draw, you can pop up the magnifier dialogue box with Alt-Z, or set the fill to transparent with Alt-T, for example. You can of course add your own sequences to those already provided.



Keystroke's design window and list of Ovation keystrokes.

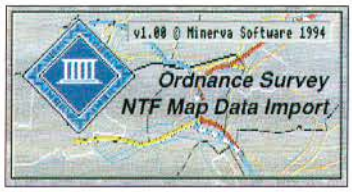
One of the most significant additions is a large library of key definition files now supplied with Keystroke. These are files which can be loaded into Keystroke to set it up with a range of pre-defined action sequences for a

The program's windows have been tidied up, and now use 3D icons as you would expect from any recent release. The manual has also been expanded in places where more detail was required about a certain feature. It still pays to read the manual several times, if only to stimulate your brain to think of all the ways in which Keystroke might be able to help you. Useful examples are sprinkled throughout, many of them no doubt gleaned from feedback from Keystroke users. For example, how about a keypress that will take the text in a writable icon, say "Chapter 1", and increment it automatically to "Chapter 2"? Or an autosave function which automatically adds an incrementing suffix to the file each time, thus preserving older versions?

You'll soon come up with ideas of your own, like the one I've just thought of - programming Ctrl-F12 to set a small Wimpslot whenever a task window is opened, instead of the default 640K.

The new version hasn't added a vast amount of functionality, but any improvements can only enhance what was already a very useful program.

Product: Keystroke	
Supplier	Quantum Software 35 Pinewood Park Livingston EH54 8NN Tel. 01506 411162
Price	£29.95 inclusive



Map Importer

by Alan Wrigley

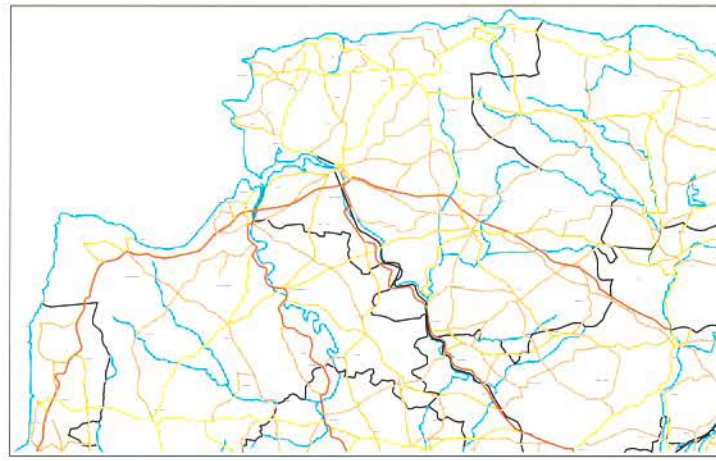
Computers have had a huge impact on school projects, enabling resources to be compiled, collated, and presented in a more professional way than ever before. A school engaged in a local project, for example, can digitise images and movie clips, record sounds, and package the whole thing up into a Genesis application or a printed DTP document. But what if you want to include maps? Until recently there was no easy way to do this, despite the fact that the Ordnance Survey has a vast amount of digital data in its archives all ready to be processed by a computer.

This data is freely available to local authorities, and so now Minerva has developed an application, *Map Importer*, which will allow the data to be converted to Draw format, and thus be imported into any RISC OS application that reads Draw files.

A wide range of data is available, including detailed maps of towns and cities at a scale of 1:1250, maps of the public and private road network, contour maps and general overview maps of Britain containing roads, railways, rivers and boundary lines. Unfortunately the data from the well-known Landranger series of maps is not available in a format that can be read by Map Importer.

The application is very simple to use. Once installed on the icon bar, any Ordnance Survey NTF (National Transfer Format) file can be dragged to it, and a save box pops up to save the data as a Draw file. Numerous options can be set, including specifying a bounding area in National Grid coordinates, choosing which features to include (e.g. major roads, minor roads, coastline features, etc.), and including codes to indicate areas to be filled (woods, lakes etc.). The output can be in either colour or monochrome.

Map Importer is an excellent idea and should be very valuable to many schools. LEA funded schools can have access to the data free of charge since LEAs have licences to use the data for educational purposes. Other schools will need to negotiate a licence with the Ordnance Survey, and then purchase the data they require.



A Draw file produced by Map Importer.

Product: Map Importer	
Supplier	Minerva Software Minerva House Baring Crescent Exeter EX1 1TL Tel. 01392 437756 Fax 01392 421762
Price	£29.95 ex. VAT (single copy) £45 ex. VAT (primary site licence) £120 ex. VAT (secondary site licence)

Bubble Help

by Alan Wrigley

Acorn has been exhorting software developers for years to make use of the interactive help facility available in RISC OS. Some producers are very good at heeding the call, while others seem to feel that you shouldn't need help to use their product. But even when a help feature is included, it's a bit pedestrian isn't it?

If you've ever wished that interactive help could be more exciting, then David Pilling's *Bubble Help* is for you. Instead of help messages appearing in a boring rectangular window at the bottom of the screen, they pop up magically in a little bubble wherever the pointer happens to be. For users finding their way around a complex application this makes a lot of sense. You can even

design your own shape for the bubble.

Once installed on the icon bar, Bubble Help can be activated and de-activated by successive clicks on the icon, or by pressing F1.

when you press any of the keys you would normally use, such as characters, cursors, Return etc.

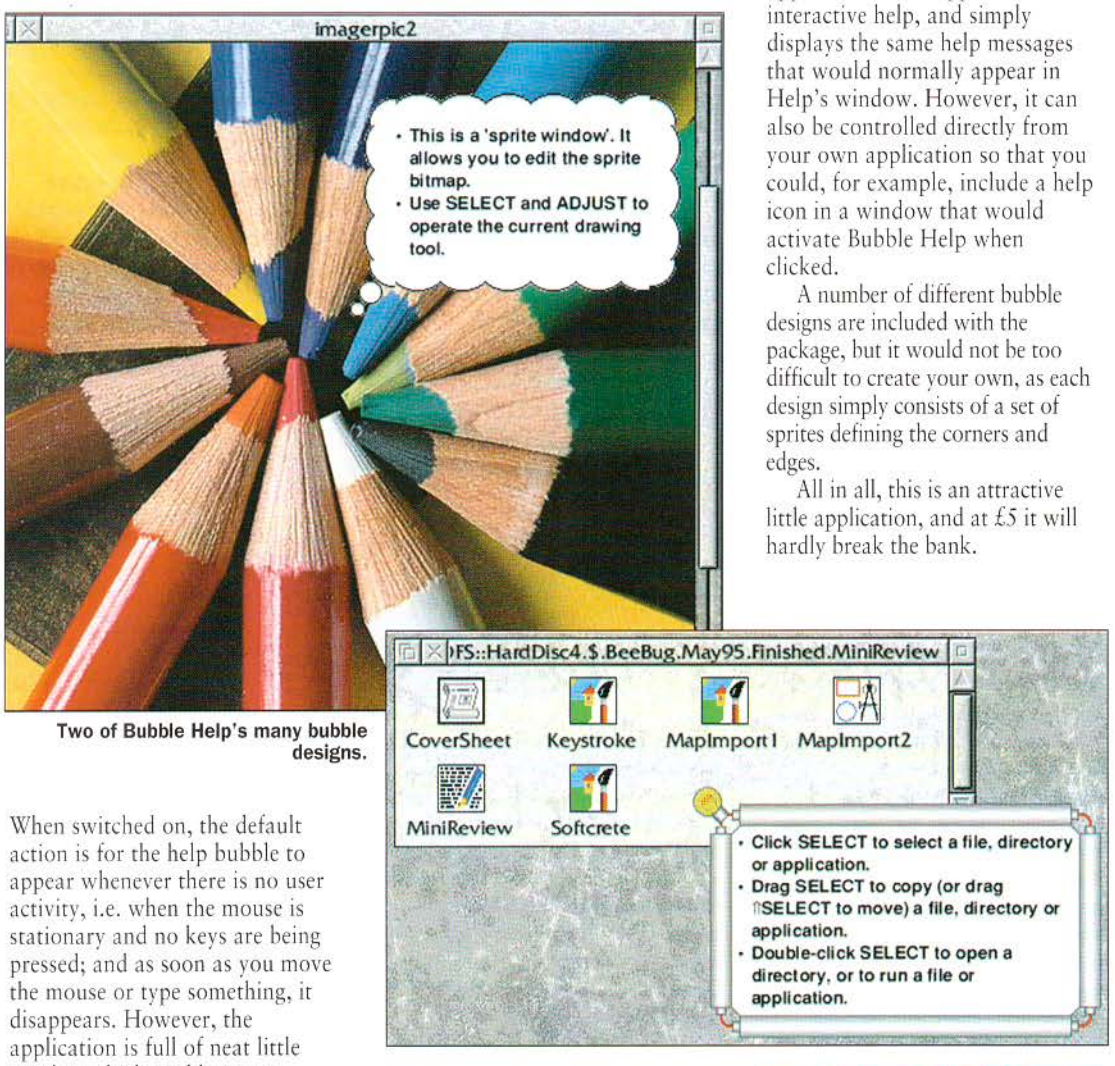
Similarly, it can be annoying with a fast mouse speed if you have difficulty holding the mouse

bullet points are added at the start of each paragraph for a really neat display. Further options are in the pipeline for the next version.

Bubble Help works with any application that supports interactive help, and simply displays the same help messages that would normally appear in Help's window. However, it can also be controlled directly from your own application so that you could, for example, include a help icon in a window that would activate Bubble Help when clicked.

A number of different bubble designs are included with the package, but it would not be too difficult to create your own, as each design simply consists of a set of sprites defining the corners and edges.

All in all, this is an attractive little application, and at £5 it will hardly break the bank.


imagerpic2
• This is a 'sprite window'. It allows you to edit the sprite bitmap.
• Use SELECT and ADJUST to operate the current drawing tool.
FS::HardDisc4.$.BeeBug.May95.Finished.MiniReview
CoverSheet
Keystroke
MapImport1
MapImport2
MiniReview
Softcrete
• Click SELECT to select a file, directory or application.
• Drag SELECT to copy (or drag ⇧SELECT to move) a file, directory or application.
• Double-click SELECT to open a directory, or to run a file or application.

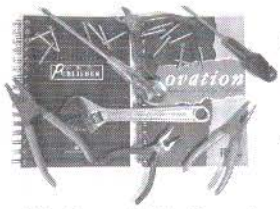
Two of Bubble Help's many bubble designs.

When switched on, the default action is for the help bubble to appear whenever there is no user activity, i.e. when the mouse is stationary and no keys are being pressed; and as soon as you move the mouse or type something, it disappears. However, the application is full of neat little touches which enable you to configure its actions in certain ways. For example, when you're typing into an editor it can be a little offputting if the bubble keeps appearing every time you pause, particularly if it's over something you want to read. So you can configure it to switch off

steady long enough to read the text before the bubble disappears. So you can configure the response time. There are a number of other useful configuration options, such as setting the font to be used, the aspect ratio of the bubble and so on. You can even specify that

Product: Bubble Help	
Supplier	David Pilling PO Box 22 Thornton Cleveleys Blackpool FY5 1LR
Price	£5.00 inc. VAT

continued on page 49



DTP Workshop - Speaking in Tongues

Richard Hallas looks at the ins and outs of inter-platform file transfer and conversion

It is a sad fact of life that Acorn computers are as good as unknown in the business world The Americans have won this particular war. If Acorn had played its cards differently a decade ago, things might have been different today; but it didn't happen, and the world now believes that PC compatibility is all that matters in computing. Except, that is, for that small, enlightened percentage which knows that Apple Macs are the best. After all, Apple has just invented the use of RISC technology in 'mainstream' computing, hasn't it?!

These comments may sound rather pessimistic, but the fact remains that Acorns are very much niche machines, and it is very unlikely that this situation will change. Given that fact, it is highly important that our favourite machines are able to communicate easily with the other platforms. A lot of pressure is put on schools, in particular, because the Acorns that they mostly use are not 'PC compatible'. This is seen as a serious weakness by outsiders because of the absence of Acorns in the 'real world' of business. The more far-sighted realise, however, that learning how to use computers is the important thing: by the time the children leave school, the world of computers will have advanced a long way. As they stand now, Acorns (and Risc PCs in particular) represent a more advanced and better quality technology than that found in PCs, and the ability to expand them with PC compatibility, if needed, extends their shelf-life no end.

Those of us who use Acorns outside the field of education are aware of the enormous advantages offered by RISC OS. Whilst there may not be vast numbers of applications available, the ones which we do have tend to be of a very high quality. Microsoft Word may be the 'industry standard' word processor, but that doesn't change the fact that many people strongly dislike it and find it extremely difficult to use, crammed as it is with vast numbers of features which they never need. It is far better to have well-designed software which performs its designated task efficiently and easily, leaving the frills, gimmicks and obscure features to other pieces of external software. This is, of course, a fundamental idea behind the way RISC OS works, and it needs the power of RISC OS' true multitasking to bring it off successfully. Most other operating systems haven't yet caught up with this concept.

Many Acorn owners, while recognising the benefits of RISC OS, are obliged to use PCs or Macs at work, or to swap files with non-Acorn-owning colleagues. Clearly, the easier it is to do this, the more reason there is to avoid the claustrophobia I always associate with the task-switching of Windows and Mac OS, and to do your work on an Acorn. But what are the options for getting PC and Mac files onto your Acorn and back again?

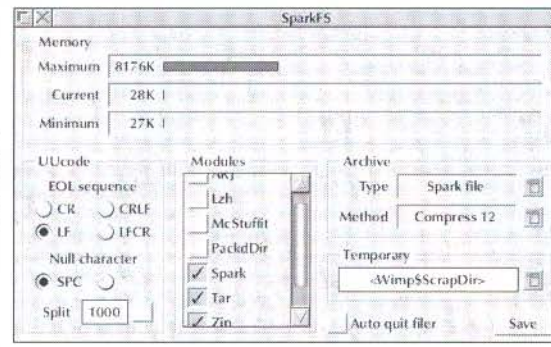


Figure 1. SparkFS has a wide range of compression options

Disc-swapping

Ever since RISC OS 3 appeared, Acorn computers have had the ability to read, write and format DOS discs and therefore get files to and fro very easily. Transferring to Macs, however, is an entirely different question, as there is no OS support for Mac discs. However, two new pieces of software have appeared very recently to enable Acorn machines to read and write Mac discs just as though they were in a native Acorn format: one is *MacFS* from Computer Concepts, and the other is *AppleFS* from Oregan. CC's offering actually exists in two versions: *MacFS* lets you use all types of Mac discs (double- and high-density floppies, CD-ROMs and SyQuest hard disc cartridges), whilst *MacFS Light* just lets you deal with floppies.

In use, MacFS is incredibly simple: you just run it (the most sensible option being to install it in your boot-up sequence) and then forget about it. The only change you can see once the software is loaded is that the *Format>Other formats* menu on the floppy disc icon menu now contains *Mac 1.44M* and *Mac 720K* entries at its head. Thereafter, using a Mac format floppy disc in the drive is just like using any other supported disc format. Anyone who transfers a lot of files between Acorn and Mac will find this a very useful purchase.

Of more widespread interest is David Pilling's superb *SparkFS*, a utility which will appeal regardless of which platform is at the other end of the transfer. It was covered in the compression systems survey in RISC User 7:8, but to summarise briefly, it lets you read and write all the common archive formats in use on all computer platforms. Being modular, you can load just the parts you need, and the program can be extended with new compression formats as necessary. Anyone who is into comms or uses the Internet from an Acorn will find this utility invaluable for accessing archives of different types, but of course it is equally useful for transporting compressed material on floppy discs.

What are you going to do with it now you've got it? This age-old question, often applied with regard to computers, is particularly relevant to transferred files. The trouble is that software on different platforms is usually completely incompatible, so if you've copied a word-processed document from a PC, the chances are you won't be able to make much use of it in your Acorn word processor.

Of course, for PC and Mac users the situation is slightly easier in that many packages exist on both platforms (e.g. Word for Windows and Word for Mac); but this is very rare for Acorn software (a notable exception being Colton's Fireworkz).

Taking the Picture

The easiest case, in a way, is that of bitmap graphics files. Acorn sprites are, of course, unique to Acorn machines, and vast numbers of graphics filetypes have sprung up over the years on the various platforms to cope with differing needs and machine capabilities. This plethora of formats may suggest great difficulty and confusion, but in reality it is easy to transport bitmap graphics between Acorns and other systems. In any case, a small core set of common filetypes has established itself as standard between platforms, particularly TIFF and GIF files, with JPEG becoming increasingly popular.

A piece of basic (but comprehensive) system software which is now supplied with all Acorn machines is *ChangeFSI*. This supports a huge range of graphics formats, but is a little confusing for a novice to use, a bit slow and, unfortunately, only able to convert foreign files into sprites, not the other way round. Nevertheless, for one-off file imports it is invaluable. Other similar utilities are available in the public domain as shareware.

If you need to import lots of images, then a much better alternative is the excellent *ImageFS* from Alternative Publishing (reviewed in RISC User 7:8). This is a very clever filing system which lets you treat many foreign image files as though they were sprites: just double-click on a TIFF file and it loads straight into Paint, for example, with the conversion being performed very quickly as it loads. This utility is particularly good because it integrates fully with the operating system and therefore works with all applications. Its only significant drawback is that there are certain things it cannot cope with (currently JPEG files and some kinds of TIFFs, for example), but improvements and enhancements are being made all the time, and Alternative Publishing has already provided support for some extra filetypes (e.g. Amiga HAM) since my earlier review.

If you are a heavy user of Impression or ArtWorks, an alternative means of importing for some kinds of files exists in the form of Computer Concepts' Graphics Loaders pack, which contains loaders for TIFF, JPEG, PhotoCD and Clear files. These loaders can work with any program that supports them, but only CC itself has made use of them so far. Nevertheless, given the popularity of Impression and ArtWorks they are highly valuable, even if they are not as 'system-wide' as ImageFS. Besides, they provide easy conversion for some kinds of graphic file which are not yet supported by ImageFS, and (particularly with the TIFF loader) the level of control over the converted image is somewhat greater. Once the graphics loaders have been installed on your hard disc (a simple case of running a program once), dragging an appropriate file to an Impression or ArtWorks window opens a conversion dialogue box (figure 2)

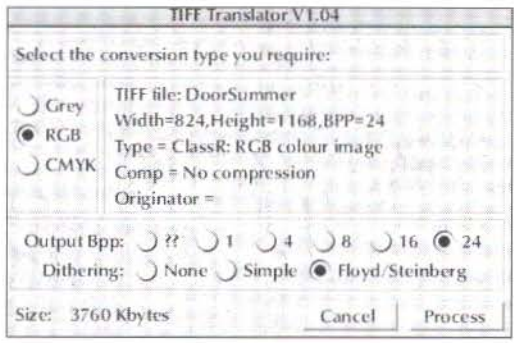


Figure 2. CC's TIFF Loader

which lets you set certain options (such as bits per pixel and dithering) before the conversion takes place.

the original except that it will also convert sprites into foreign filetypes as you save them out of applications.

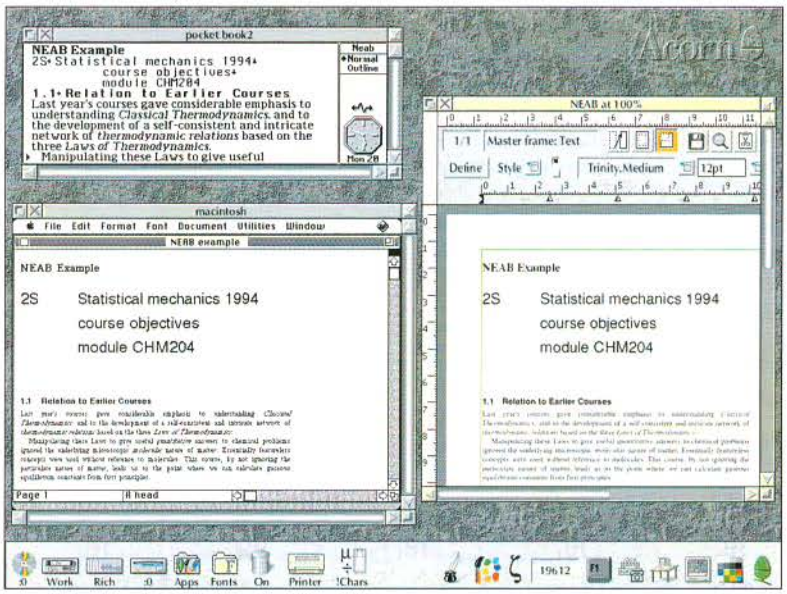


Figure 3.
The same document in a Pocket Book II, a Macintosh, and Impression, transferred around as an RTF file (notice how much more readable the text is on the Acorn, thanks to anti-aliasing)

All the software I have talked about so far is concerned with importing. Unfortunately the exporting of bitmap images is somewhat less well covered. The cheapest option at the moment is David Pilling's *ImageMaster*. This is widely used in conjunction with TWAIN for importing images from scanners, but it is also a capable image manipulation package in its own right which will both load and save in a variety of common image formats. Of course, all the more expensive painting and photo-retouching packages support a variety of common graphics filetypes, but are an expensive way of achieving an export facility. Various small additional utilities exist in the public domain, although they tend to be rather limited.

Of great potential interest, though still a few months away, is the 'universal' version of Alternative's ImageFS. This will behave just like

The other family of graphics files is, of course, vector images. Here there is very little to say, other than that the situation leaves something to be desired. Acorn's Draw can import (with limited success) DXF files, and a utility to convert Windows Metafiles to Draw is available from Norwich Computer Services. Other than that, you will have to buy ArtWorks, which will import and export Encapsulated PostScript files for use with CorelDraw, Adobe Illustrator and Aldus FreeHand.

Spreading the Word

The transportation of textual documents between systems may seem at first sight to be relatively straightforward, at least compared with graphics. However, in reality the reverse is true. First of all, there is the initial awkwardness that Acorn, Mac and PC systems all have different layouts in their basic character sets. The basic letters and numbers are the same, but many symbols migrate between character codes or are not present in all the different versions. In simple terms, the lower half of the character set of each machine (the standard ASCII 7-bit set) is the same; but the upper half is not standardised. This sometimes leads to glitches where a character is not translated to its correct equivalent on a different platform.

A second, related, difficulty is that of fonts. Equivalent fonts frequently have different names between Acorn and other systems, and whilst fonts generally follow a standard layout on any given platform, there are always rogue fonts which do not, or fonts for specialised uses which differ for very specific reasons. This is a hugely complex area: suffice it to say that it is necessary to map individual fonts between systems, both in terms of their names and sometimes their internal character layouts.

These points are, in a way, side issues to the basic fact that virtually every different word processing or text layout package, on whatever platform, has its own unique file format and features. This makes it extremely difficult to produce a foolproof method of transporting a textual document produced in package A on system X to package B on system Y and keep it looking the same. The nearest thing to this ideal is currently Rich Text Format: RTF files contain lots of font and text layout information in a software-independent plain text file, and are supported (in varying degrees) by most common word processors. This allows you to retain a useful amount of work beyond the basic input of text when transferring a document between software applications.

Support for RTF files has been rather conspicuous by its absence in the most popular RISC OS word processing and DTP applications (though recent versions of Colton's

Wordz can accept RTF files). Ovation Pro will accept RTF files and Impression has always had a wide range of file importers, but now CC has released a text filter package which handles RTF files and WordPerfect 5.1 files. Installation of the filters is extremely simple, just like installing any other Impression loader. An additional application, *CCMapper*, helps you set up the default font mappings and edit font names and character order, as described above.

Publishing's textual companion to ImageFS. This is some way off yet, but it is intended that it will convert documents between a number of different formats (e.g. RTF and Microsoft Word) as you save and load, in a similar way to ImageFS' treatment of graphics files. If this comes off it could be spectacularly useful, and I look forward to seeing it when it appears.

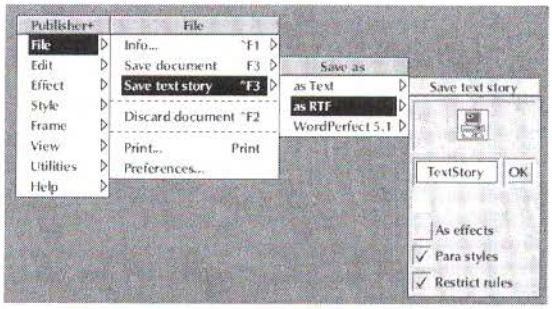


Figure 4. The RTF save option available when using CC's filter

Once set up, Impression can save and load RTF and WordPerfect files as though the facility had been built in from the start, and the integration is seamless. The *Save text story* option now leads to a further submenu containing Text (the original option), RTF and WordPerfect 5.1 options; both the latter have switches to control the treatment of styles and effects (see figure 4).

It should be noted that there are limitations when transporting files in this way because of things which Impression can't do (e.g. soft return characters, multi-column frames and lots of table effects) and which therefore get ignored. It is likely that importing an RTF file (from whatever package) will require a certain amount of work in tidying up afterwards because of the varying features of different applications. However, it's a lot better than having to start completely afresh with just plain text.

Another potentially important development is *TextFS*, Alternative

To Conclude

The whole area of file transfer is a complex and thorny one. It is tempting to think that Acorn users are out on a limb, and that life is easy for PC and Mac users who share common software between their systems. However, do not be fooled! As a simple example, Microsoft Word version 6 is renowned for its inability to load reliably documents created on earlier versions of Word, and PC packages in general often suffer from this kind of syndrome; it often seems as though buying a major upgrade to a PC software package is like buying a whole new program.

Nevertheless, it is to be hoped that more and better means of transferring files of all kinds appear for Acorn users, because the ability to connect to the outside world is essential to the continuing success of the platform. ImageFS is an excellent product, and it is to be hoped that TextFS can maintain its high standard. One can also hope that Xara Studio (ArtWorks 2 for the PC) will enjoy a lot of success in the PC world, because if it does it will presumably have an ArtWorks file-compatibility mode which will allow easy porting of vector files to and from the PC. With any luck, CC may even convert it back to RISC OS at some stage (and that must be very high on the wish-list of most Acorn owners).

Once the Risc PC 486 card and its descendants are widely available, the need for file compatibility will be even greater. There are some promising developments in the offing; it will be interesting to see what the future holds.

AppleFS

Supplier Oregan Software Developments
36 Grosvenor Avenue
Streetly
Sutton Coldfield B74 3PE
Tel. 0121 353 6044
Fax 0121 353 6472

Price £59.95 inc. VAT

MacFS, MacFS Light, Graphics Loaders, Text Filters

Supplier Computer Concepts
Gaddesden Place
Hemel Hempstead HP2 6EX
Tel. 01442 63933
Fax 01442 231632

Price
MacFS: £116.32 inc. VAT
MacFS Light: £57.57 inc. VAT
Graphics Loaders: £45.82 inc. VAT
Text Filters: £34.07 inc. VAT

SparkFS

Supplier David Pilling
PO Box 22
Thornton Cleveleys
Blackpool FY5 1LR

Price £25 inc. VAT

ImageFS

Supplier Alternative Publishing Ltd
Pentagon House
Washington Street
Glasgow G3 8AZ
Tel. 0141 248 2322

Price £41.06 inc. VAT

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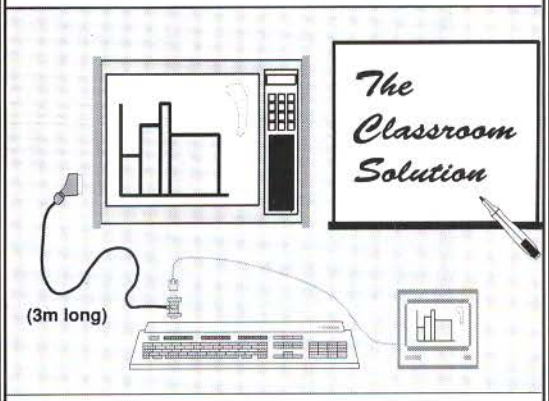
FOR THE CLASSROOM



A complete and inexpensive range of cables is now available - designed in association with Acorn Computers Ltd - to allow any Acorn computer and monitor to be connected to a classroom TV.

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TYPE 5:	9-pin (eg A3000) to TV only	£12

Type 5 may not work with some TVs - use:

TYPE 6:	Acorn "Active Scart" lead [1.5m] + 9-pin extension lead	£39

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Contact: Douglas Butler

& TIPS HINTS

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Master Text Frames in Publisher
Hannah Mackerrie

Having just invested in Impression Publisher, my very first document produced a problem that didn't appear to be solved by the manual! I altered the master page by adding header and footer frames, and returned to the main document ready to type into the main frame on the page. But all I saw was a rectangular pointer with the characters "MP", and no way of positioning the caret or entering text. After much gnashing of teeth I searched all through the manual for some mention of this, and then at last I spotted the words "You cannot enter text into master page text frames". I must have inadvertently put some text into the frame on the master page, and even though I clearly deleted it, the frame had been designated as a text frame. Moral of the story: be very careful what you do on master pages.

Tippex on Discs
Alan Wrigley

Occasionally I receive a floppy disc which has had the details on its label altered by using Tippex. This is not a good idea! Over time the Tippex can flake off, particularly if it is applied thickly, leaving tiny specks of the hardened material all over the disc just itching to get inside the casing and the inner workings of your drive. It really isn't worth the risk, and you could end up with an irate phone call from someone with a damaged drive. Most users usually acquire more blank disc labels than they can use anyway, so there's no excuse for re-using a label in this way.

Beebug can supply 100 blank 3½" disc labels at £3.52 fully inclusive - code 0670a.

Text with Thick Outlines
Wesley Jones

You can create text with a thick outline and a coloured or plain body by using Draw's ability to convert text to a path; to do this you must first select the text and then go to the *Select* submenu and choose *Convert to path*. Having converted the text to a path, select a thick line width and line colour. However, this can destroy the shape of the text, as shown here:

This can be cured very simply by copying the converted text in the same place (lock the grid, select the object and copy it, then snap it back into place over the original). Now give the copy a transparent line colour and your chosen fill colour. As you can see, the shape of the text is now exactly that defined by the font, which looks much better:

RISC User

Using the SWIs Wimp_StartTask and TaskManager_TaskNameFromHandle

Nathan Micholey

The Task Manager relies on the Wimp message *Message_TaskInitialise* (&400C2) to keep its display up to date. This means that if you use *Wimp_StartTask* to start a child process, the handle returned by *Wimp_StartTask* cannot be passed immediately to the SWI *TaskManager_TaskNameFromHandle*. This is because control is returned to your program immediately the child task calls *Wimp_Poll*. The Task Manager won't get the *Message_TaskInitialise* until you call *Wimp_Poll* yourself. After you do, you will be able to find the name of the task when you receive the *Message_TaskInitialise* yourself. You should not wait for a null event as the task could quit before you get one.

Aborting a File Copy Operation

Mike Whiteman

If you use RISC OS 3's multitasking file copying facility and click on *Abort* before the operation is complete, the file being copied at the time, still appears in the destination directory but with a filetype of &FFD (Data). You should be aware of the fact that this file will more than likely be incomplete.

Closing a Directory after Copying

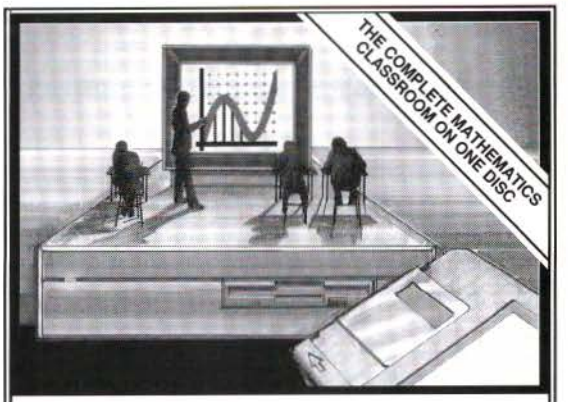
Henry Morgan

Very often when you copy a file or files, you want to close the parent directory viewer straight away. It's surprising how many users don't realise that you can do this by dragging with Adjust rather than Select - as soon as you release the button, the parent window closes. This also works when holding down Shift to move files.

Fast Wipe for High Density Floppies

Jochen Konietzko

In answer to Mr Copping's question concerning the use of RISC User's *FastWipe* with high density floppies



Autograph

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Tel: 0832-273444 *Fax:.* 0832-272760
Contact: Douglas Butler

(*Technical Queries*, RISC User 8:4), there is a simple way to wipe a HD disc quickly. Just keep an empty, formatted HD disc ready, and back it up onto the disc to be wiped. This will "empty" a full 1600K floppy within seconds.

Several readers offered this solution to the problem, but Jochen Konietzko got there first. Thanks to everyone who wrote in.

See also this month's magazine disc for a superb application which extends the concept of !Fastwipe to all disc formats.

Saving Disc Space with Impression Documents

Peter Blackburn

When using Impression Style I have found two ways of saving disc space. Impression stores master pages in every document file you save, but often only one layout is required. Although Computer Concepts advise against it, it is possible to delete all unnecessary master pages from a file. If you then save a blank file (e.g. A4 portrait), you have a ready-made start-up for any document requiring only one page format.

The second way of saving disc space is to save any document containing only text and not too many different styles as a plain text file. For correspondence, for example, this enables you to keep hundreds of files on a single floppy. Should you need to refer to the file again it can either be read in Edit or simply dropped into a blank Impression window.

Expanded Strings with Function Keys

Charles Pickett

In the good old days of the BBC micro, a very common use of the function keys was to act as macro keys for expanded strings. With the advent of the RISC OS desktop and the concept of multitasking and sharing of resources, this has largely fallen into disuse. However, the facility is still there, and surprisingly it often works in writable icons. This means that if you find that you have to enter a string of text into a writable icon repeatedly, you can often program a function key to do it for you. This will not always work, however, as some applications trap function key presses in their dialogue boxes.

You can program the keys by using the following command from the command line (i.e. press F12 from the desktop):

```
Keyn <string>
```

where *n* is the number of the key and *string* is the required text string. For example, suppose you wanted to set a whole series of alarms to remind you to video your favourite TV programs. You could program a function key as follows:

```
Key1 Switch on video recorder
```

Now each time you open the *Set alarm* box, you just press F1 and the string is inserted into the *Message* writable icon. There are two other useful things to remember: firstly the Print key acts as F0, so you can program this as well; and secondly you can embed carriage returns in the string by using "|M" (the vertical bar is above the backslash on the keyboard).

The strings are stored in the system variable *Key$n* where n again corresponds to the key number. This allows you to edit the string at the command line, or indeed to set it by the alternative method of:

```
Set Key$n <string>
```

If you have a set of strings that you regularly need to use, you can create an Obey file which could be run as part of your boot sequence. This would contain a sequence of lines as required, for example:

```
Set Key$1 Switch on video recorder
Set Key$2 Time for coffee
```

and so on.

Changing Mode Using Obey Files

Alan Wrigley

Users who change the desktop screen mode frequently complain that there is no quick way to do so. On RISC OS 2 and 3.1 you need to open the Palette menu from the icon bar, go to the *Mode* submenu, and if you're lucky the mode number you want will be on the submenu. If not you have to type it in. On the Risc PC it is even more of a fiddle - up to 6 mouse clicks via the Display Manager icon.

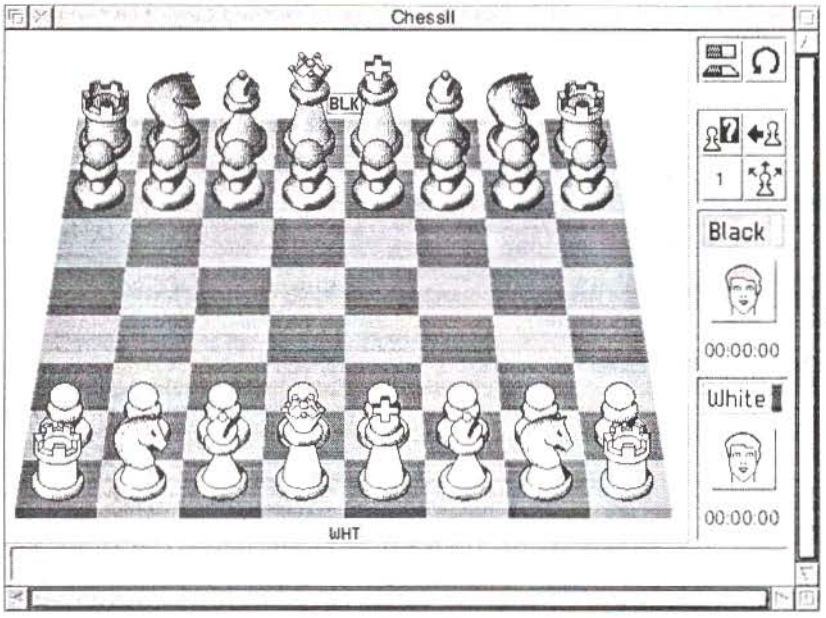
If you have a number of screen modes that you use regularly, you can pin a series of Obey files to your pinboard to do the job with one double click. For machines prior to the Risc PC all you need in each file is a single line:

```
WimpMode n
```

where n is the mode number. This will also work on the Risc PC for numbered modes (i.e. 0-49), but if you want to use modes for which a mode specifier is required, the line will need to read something like this (where the correct parameters are inserted as required):

```
WimpMode X800 Y600 C256
```

Chess II



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Just-a-Page

Does your hard drive make an annoying racket even when not in use? Peter Hillman describes a short program that may be able to help solve your problems

PowerCtrl

On the A4 portable, the hard drive can be powered down to preserve battery power. The SWI call "ADFS_PowerControl" which does this also exists on any RISC OS 3 machine. However, Acorn warn you that with some makes of hard drive, the call may lock up your machine, retrievable only with a factory reset (switch on holding down delete), so before you try it, save your Configure settings! You can use the CMOS Editor on last month's magazine disc to do this. However, it works with my Beebug drive perfectly *(I've also tested it successfully on a Risc PC 420Mb drive - Ed)*.

The following short application provides a front end to this useful call. To use it, first create a directory call *!PowerCtrl* somewhere on your hard drive and Shift-double-click on it. Now load Edit and create an Obey file with the following lines:

```
Wimpslot -min 8K -max 8K Run
<Obey$Dir>.!RunImage
```

Save this inside the *!PowerCtrl* directory as *!Run*. Now create a Basic program from listing 1. Save this as *!RunImage* in the *!PowerCtrl* directory. Running the application will now place an arrow on the left hand side of the icon bar, which will alternately power up and down drive 4 when clicked on. The direction of the arrow shows whether the drive will power up or down when clicked. When powering up, it will take a second or two before the drive gets up to speed. To change the drive number, change the two occurrences of 4 in the parameters to SYS "ADFS_PowerControl" at lines 340 and 400.

Most drives will auto-power on when needed. This means that if you power the drive down using PowerCtrl and then power it up by accessing it in the normal way, the arrow will be showing the wrong direction. The version of PowerCtrl on this month's magazine disc overcomes this by checking occasionally to see that the drive status matches the status of the icon.

Although powering the drive down for long periods can reduce wear, doing it excessively will in itself cause wear to the drive, so you should only power down when the drive is unlikely to be used for a while.

Listing 1

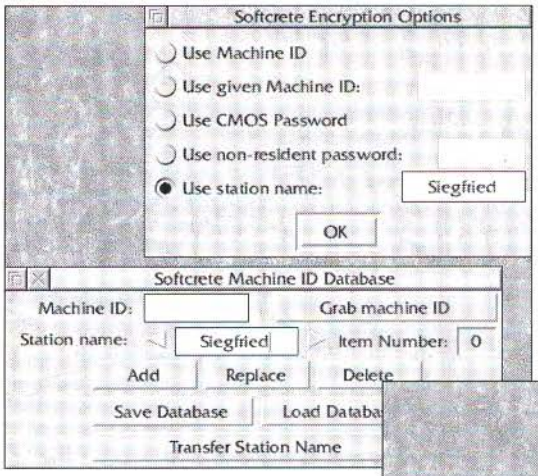
```
  10 REM             >!RunImage
  20 REM Program     Drive Power-Down
  30 REM Author      Peter Hillman
  40 REM Version     1.00
  50 REM RISC User May 1995
  60 REM Program     Subject to Copyright
  70 REM             Not Public Domain
  80 :
  90 SYS "Wimp_Initialise",200,&4B53415
4,"PowerCtrl"
 100 DIM b% 255:DIM m% 51,ic% 6
 110 q%=FALSE:$ic%="Sdown"
 120 !b%=-2:b%!4=0:b%!8=12:b%!12=44
 130 b%!16=56:b%!20=&3103:b%!24=ic%+5
 140 b%!28=ic%:b%!32=1
 150 SYS "Wimp_CreateIcon",,b% TO h%
 160 $m%="PowerCtrl":m%!12=&70207
 170 m%!16=128:m%!20=44:m%!24=0
 180 m%!28=&80:m%!32=-1:m%!36=&7000021
 190 $(m%+40)="Quit"
 200 WHILE NOT q%
 210  SYS "Wimp_Poll",1,b% TO code%
 220 CASE code% OF
 230  WHEN 6:PROCClk
 240  WHEN 9:q%=TRUE
 250 WHEN 17,18:IF b%!16=0 q%=TRUE
 260 ENDCASE
 270 ENDWHILE
 280 SYS "Wimp_CloseDown":END
 290 :
 300 DEF PROCClk
 310 IF b%!8=2 THEN
 320  SYS "Wimp_CreateMenu",,m%,!b%-48,
140
 330 ELSE
 340  SYS "ADFS_PowerControl",0,4,0 TO
,,T%
 350  IF T% THEN
 360   T%=2:$ic%="sup"
 370  ELSE
 380   T%=1:$ic%="sdown"
 390  ENDIF
 400  SYS "ADFS_PowerControl",T%,4,0
 410  !b%=-2:b%!4=h%:b%!8=0:b%!12=0
 420  SYS "Wimp_SetIconState",,b%
 430 ENDIF
 440 ENDPROC
```

continued from page 39

Softcrete

by David Bradforth

Softcrete from the Really Good Software Company is an application which provides protection for other applications, preventing them from being run unless certain conditions are met. This makes it a useful utility in situations where several people have access to the same computer or network. It works by encrypting an application's program file (e.g. !RunImage) using one of several methods chosen by the user.



Softcrete in action.

The first of these, *Use machine ID*, would be perfect for a program to be run on one single machine (A5000 or later). It relies on the number stored in the internal chip of machines released after the A5000 and provides one of the easiest methods around of ensuring program security! This means that the program can now only ever be run on the machine on which it was encrypted.

The next, *Use given machine ID*, relies on you knowing the number for the machine ID of the computer on which you wish to use the protected program. I'm not at all sure that this option is a good idea, as should you type in the wrong value and encrypt your only copy of *Wing Commander: The Arc Version* (against the advice of the manual), then you've lost it forever!

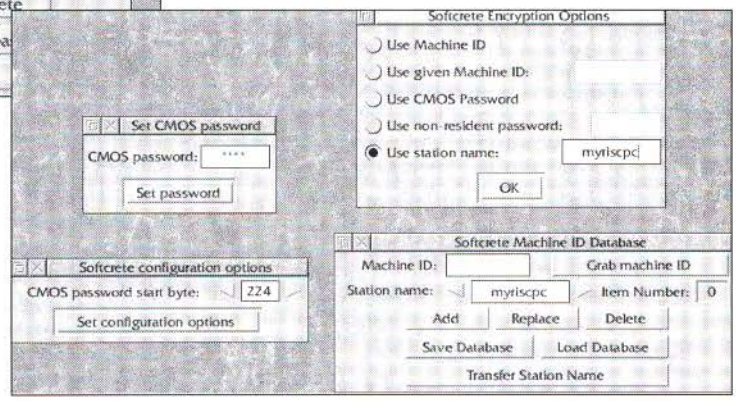
The third method, *Use CMOS password*, encrypts an application making use of a password stored in the CMOS RAM of the computer you are using. As explained in an additional leaflet with the manual, this goes against Acorn guidelines, but it is useful in certain circumstances - for example, where you may wish to allow a program to be used on a specific group of machines.

The fourth, *Use non-resident password*, enables you to key in a password (which is *not* stored in CMOS RAM) by which all application encryption will take place. Any applications which have been encrypted using this method can now be run only by making use of an application supplied with the package called *SCreteNRP*, and keying in the password in the writable icon provided.

The final option, *Use station name*, makes use of a machine ID database. In here you can store details of computers' machine IDs and also nicknames which you can give to each machine (e.g. "davesriscpc"). You can now enter the nickname of the computer that the application is to be encrypted for, and if Softcrete finds it in the database it will then encrypt the application using much the same process as that for the machine ID/given machine ID options explained earlier.

Product: Softcrete	
Supplier	The Really Good Software Company 39 Carisbrooke Road Harpenden AL5 5QS Tel/fax: 01582 761395
Price:	£24.95 inclusive

Softcrete provides a number of encryption possibilities which together make up a powerful package, ideal for preventing unauthorised usage of software in a normal situation (e.g. at a show). Personally, I would have liked the ability to protect application documents from unauthorised usage - the recommended solution was to encrypt the application, but I may not want to stop people using the application - merely keep them away from my precious files!



TECHNICAL QUERIES

Alan Wrigley answers your queries on date formats and international characters

Q *I am having difficulty printing out the date and time in a specified format. My application's !Run file sets two variables as follows:*

```
Set Accounts$TimeFormat "%z12:%mi:%se %pm"
Set Accounts$DateFormat "%zdy%st %mo %ce%yr"
```

I have tried printing the variables directly, but all that appears is the format string instead of a date.

Michael Titmas

A The strings you have used in the variables (i.e. the specific combinations of characters preceded in each case by a % character) are merely format strings. They determine the format in which the date or time will appear, but they are only of use in conjunction with a time value and a SWI which converts this to a string. The standard SWI call for doing this is *OS_ConvertDateAndTime*. To call this SWI, R0 must point to a 5-byte time value, R1 points to the buffer in which you want to place the resulting string, R2 holds the size of the buffer, and R3 points to the format string. The 5-byte value of the current real time can be obtained by first calling *OS_Word 14,3*.

First of all, however, you need to find out and store the value held by the system variable, i.e. the format string. To do this you use the SWI *OS_ReadVarVal* as follows:

```
DIM timeform% 255
SYS "OS_ReadVarVal","Accounts$TimeFormat",time
form%,256,0,3
```

where *timeform%* is where the string will be stored, and 256 is the size of this area (you can make it smaller if you know the maximum size of the string).

Now you can use the format string to convert the current time. The following code assumes that you already have a general purpose block at *block%*, and that you have dimensioned an area *timestring%* of length *len%*:

```
?block%=3:SYS "OS_Word",14,block%
SYS "OS_ConvertDateAndTime",block%,timestring%,
len%,timeform% TO ,end%
?end%=13
```

The correctly formatted time string should now be at *timestring%* (with its terminating null byte converted to a carriage return for use in Basic).

Just to confuse matters a little further, from RISC OS 3 onwards you should not use *OS_ConvertDateAndTime*, but instead use the similar *SWI Territory_ConvertDateAndTime*. This is to ensure that date and time formats correspond to the conventions of the particular territory under which the computer is operating. In this case, R0 holds the territory number, or -1 for the current territory, while all the other parameters are shifted up one register: i.e. R1-R4 correspond to R0-R3 in *OS_ConvertDateAndTime*.

Q *Living in Poland, I sometimes need special characters. Is it possible to access these using ASCII codes, and do normal fonts support these characters? Also, can cyrillic (e.g. Russian) characters be obtained?*

Peter Blackburn

A The question of character sets is a thorny one, and not yet implemented entirely to everyone's satisfaction. In keeping with Acorn's intention of making its computers fully internationalised, a number of different character sets are supported. These include four sets of Latin characters as well as Greek and Cyrillic. Latin1 is the standard western European set, while Latin2 contains the Polish characters you require. It's important to understand that in all these alphabets, the basic English ASCII set (characters 32-126) is unchanged. The top-bit-set characters (128 and above) are used to implement the additional alphabets. By using the **Alphabet* command the system font can be switched between the various sets, and if you are working with an application that uses the system font you can access the additional characters by using the Chars application or by entering the ASCII code on the numeric keypad with the Alt key held down.

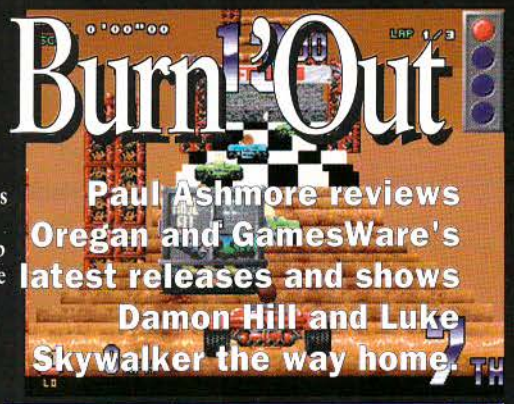
The Acorn outline fonts built into the ROM from RISC OS 3 onwards contain all these character sets, but unfortunately most applications have not been written in such a way as to be able to use them. One application which *can* display alphabets other than Latin1 is Edit, although it's not entirely straightforward to do so. Details were given in *Hints & Tips* (RISC User 7:10).

Some font companies can supply fonts which have non-Latin1 character sets as standard, and which can be used with most applications. One of the first to do so was the Electronic Font Foundry, and you may find it worthwhile contacting them at Gibbs House, Kennel Ride, Ascot SL5 7NT, tel. 01344 891355, fax 01344 891366.

We hope to cover this topic more thoroughly in a future article in RISC User.

Burn 'Out

Supplier	Oregan Software Developments Grosvenor Avenue, Streetly Sutton Coldfield B74 3PE
Price	£24.95


Burn 'Out
Paul Ashmore reviews Oregan and GamesWare's latest releases and shows Damon Hill and Luke Skywalker the way home.

This is the game I have been waiting for ages to try out. Burn 'Out is similar in concept to Out Run on Sega systems, and you, the budding car driver (it is actually a dune buggy), must complete each level in a certain time to carry on to the next level. To succeed you can adopt the personality of any of twenty drivers, and choose from ten dune buggies. Besides the time criterion, to reach the next level you have to achieve a top three position; and what can be easier as there are only five other buggies in the race!

The graphics are just superb, as is the stereo music. The game play is fast and furious, and the introduction gets you in the right mood to take on the whole world.

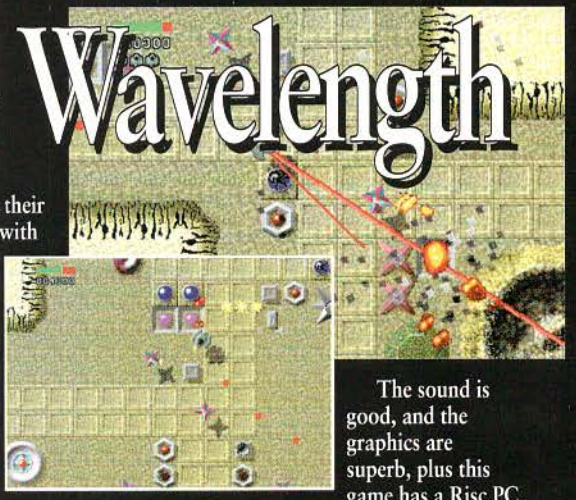
On your way round each of the ten possible courses you have to dodge other buggies, lorries, and other obstacles blocking your way. In your effort to miss these objects, you may find your buggy flying over the top of hills, so make sure there are no sharp bends as you land!

As you complete more levels, and hence encounter harder stages, you are offered the opportunity to boost your buggy's engine performance, or even fit a better set of tyres in the pit lane garage.

This game is definitely one to buy, and will (according to Oregan) be available at the Harrogate Show. If you are going to the show, get ready to see a major advertising campaign for this product, with special Burn 'Out coins so you can test drive the game yourself.

Wavelength

Supplier	GamesWare Worthy House High Street, Hamble Hampshire, SO31 4HA Tel/Fax 01709 456523
Price	£ 19.95



Now Damon's out the way, let's now blow away Luke Skywalker. Wavelength is a shoot 'em up that will make your trigger finger ache for weeks. This game was written by Tom Cooper, famous for his PD Games Dinosaw, and Son of Gryinus.

Wavelength contains literally hundreds of levels to complete, with each level taking between five and twenty minutes. You are the pilot of a little fighter plane whose job it is to stop aliens taking over the colonies owned by your superiors.

Your plane is initially armed with lethal bolts as weapons, and it is a wise start to kill anything that moves. As a result the aliens start dying and blobs called "Power-Ups" appear from their wreckage. Impact with these Power-Ups changes your weapons to Lasers, Helix, and a really clever one that kills the vermin around corners! Some of the Power-Ups slowly change colour, with the colour indicating the type of weapon you will be firing. Impact with Power-Ups can also upgrade your armoury to include shields, and droids that fly adjacent to you firing missiles. One handy hint - keep collecting the same colour Power-Up and that weapon will increase in power.

The sound is good, and the graphics are superb, plus this game has a Risc PC mode built-in. Wavelength comes on two floppies which cannot be copied on to hard disc. As a result frequent disc swapping is required, and this is the only drawback I could find with the whole game. If you like shoot 'em ups this is currently one of the best.

Useful Internet Addresses

Paul Ashmore browses around the Net on your behalf, and looks at different newsgroups, ftp and worldwide web sites available globally for the Acorn market, plus some other areas of possible interest. Bear in mind that what is presented below is but a small sample of available material.

NEWSGROUPS

alt.binaries.pictures.celebrities
alt.binaries.pictures.fine-art.digitized
alt.binaries.pictures.astro
alt.binaries.sounds.midi
alt.books.reviews
alt.cad.autocad
comp.os.windows.apps
comp.sources.acorn
comp.sources.bugs
comp.std.c
comp.std.c++
comp.sys.acorn
comp.sys.acorn.advocacy comp.sys.acorn.announce
comp.sys.acorn.games
comp.sys.acorn.tech
comp.sys.acorn.programmer
comp.sys.acorn.networking
comp.sys.acorn.misc
comp.sys.acorn.sys

FTP

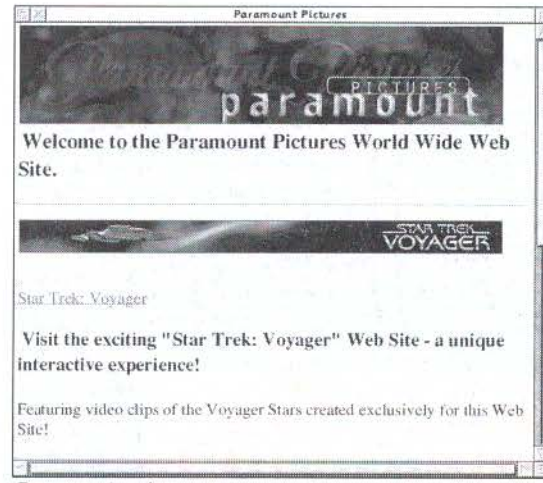
actrix.gen.nz
al.mrc-lmb.cam.ac.uk
alife1.cs.man.ac.uk
ftp.acorn.co.uk
ftp.andrew.cmu.edu
ftp.ant.co.uk
ftp.comlab.ox.ac.uk
ftp.cs.arizona.edu
ftp.cs.chalmers.se

edu Education
nz New Zealand
se Sweden
uk United Kingdom

Table 1. FTP Countries of Origin.

WORLD WIDE WEB

http://acorn.educ.nottingham.ac.uk/ShellCent/PubList/#b
http://delenn.ecs.soton.ac.uk/
http://irix.bris.ac.uk/%7Erb4420/piglet.html
http://louis.ecs.soton.ac.uk/%7Esnb94r/arcweb.html
http://micros.hensa.ac.uk/micros/arch.html
http://mphhpc.ph.man.ac.uk/%7Embcaprt/acorn2.html
http://pcsupp1.cc.rl.ac.uk/home/chris/hchof/
http://whirligig.ecs.soton.ac.uk/%7Ermk92/armlinux.html
http://wombat.doc.ic.ac.uk/?Acorn
http://www.ant.co.uk/


Paramount Pictures
PICTURES
paramount
Welcome to the Paramount Pictures World Wide Web Site.
STAR TREK VOYAGER
Star Trek: Voyager
Visit the exciting "Star Trek: Voyager" Web Site - a unique interactive experience!
Featuring video clips of the Voyager Stars created exclusively for this Web Site!

Paramount welcome screen
http://www.paramount.com/

http://www.paramount.com/
http://www.brad.ac.uk/%7Epjknight/home.html
http://http1.brunel.ac.uk:8080/%7Ebe94mmd/DoggySft/
http://www.brunel.ac.uk:8080/%7Ecs92adf/
http://http1.brunel.ac.uk:8080/%7Ema94bbw/Planet_multimedia/
http://www.cis.ohio-state.edu/hypertext/faq/usenet/acorn/top.html
http://www.cms.dmu.ac.uk/%7Eaug/articles/acm/acmtitle.html
http://www.cms.dmu.ac.uk/%7Eaug/micros/arc/
http://www.cms.dmu.ac.uk/%7Ese2ij/oregan.html
http://www.comlab.ox.ac.uk/oucl/users/robin.watts/
http://www.cs.bham.ac.uk/%7Ensd/intro.html
http://www.apple.com/ http://www.microsoft.com/
http://www.cs.man.ac.uk/%7Egriffitm/acorn/
http://www.cs.man.ac.uk/%7Epartingr/acorn.html
http://www.cs.man.ac.uk/amulet/
http://www.cs.vu.nl/%7Egerben/acorn/

Prime Time?

Mark Sealey examines the latest offering from Minerva designed to handle and display animations

PrimeMover is a sophisticated animation package from Minerva. Although it is the latest in their Prime series, it could well have applications beyond the (primary) education market and this reasonably priced package represents a convincing example of how well the RISC OS platform can control and present graphical animations if you are prepared to work at it. The animations created are designed to be replayed within PrimeMover itself (in a scalable window) or exported as Ace films. There is no provision for saving a sprite sequence which could be compiled into a Replay movie.

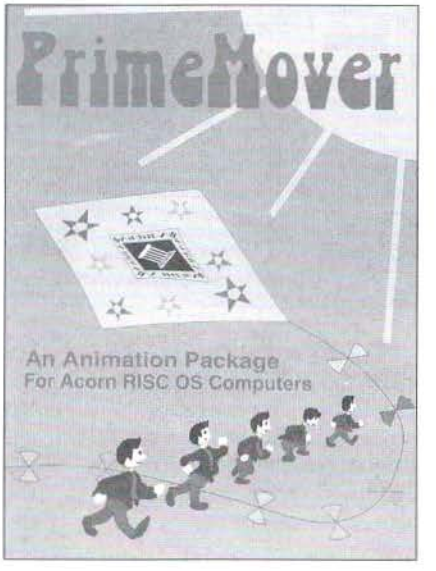
The software comes on a single disc, is not protected and is easily installed. It can be run from either a hard disc or a floppy. A single icon appears on the icon bar and sample films (only one of which is provided with the package) can be dropped here, or onto the single main window which controls the business of animation and display. More than one window can be open at once.

This window (see figure 1) has a button bar (usefully configurable) at its top allowing manipulation of the film itself, its components (sprites from almost any painting package), file and disc management, ruler control and grid settings.

At the foot is the Time Ruler Window, which is in two parts: the ruler with time intervals in segments, easily configurable from 1 second to an hour (the full length of this ruler corresponds to the total duration of the film); and the snapshot frames, where scrollable graphic frames are aligned at their leftmost edge with the corresponding point in time on the ruler.

Onscreen menu options complement and duplicate button bar functions, although there are no overly complex trees to navigate, a bonus for young users who could well become quite enthusiastic about the process of moving their images (but see later).

There is ample control of the elements of each film. Sliding rulers and pointers as well as indications of time, all controlled with judicious and intelligent use of the mouse buttons, make manipulation pretty straightforward, once you have become familiar with the process.



Using PrimeMover

The principal components of an animation are the background, midground and foreground. These are controllable individually and may be seen to interact with one another. In other words, an object moving in the midground will appear to pass convincingly behind one in the foreground but in front of everything still visible in the background. The impression at times is that of a puppet theatre: there is no attempt to emulate perspective or angle.

The path of each object is controlled by a series of 'steps'; these are the red circles and rectangles shown in the illustration. They are linked by moveable paths (thin blue lines that turn green while you alter them) in the same way that you alter the bounds of a frame in a desktop publishing environment. Steps can be easily added and deleted, although you must keep the first and last points.

Creating a film

This is where things start to get complicated. There are very many variables, and a conceptually complex framework in which to manipulate them all (the time ruler, Adjust-dragging of markers, the planes on which the various objects appear and the interaction between them). It is doubtful whether many primary age pupils would be able to appreciate the intricacies, which are not particularly well explained in the manual, either.

Inadvertent double clicks (which any child could make without intending to cause damage) led to

objects disappearing, unexplained dialogue boxes opening and the state of editing being altered without an apparent and easy way back. The levels of editing and stacking of objects are not clear; this is controlled by the rather arcane Ctrl-cursor up/down! Its logic may not be appropriate to many children.

Shift-drag and Adjust-drag (memorising the distinctions could be, perhaps, another barrier to younger users). This means that several windows (often large) have to be open on the screen at once (see figure 2). This is yet another disincentive to those not entirely proficient in managing the RISC OS desktop. It is hard to see how this

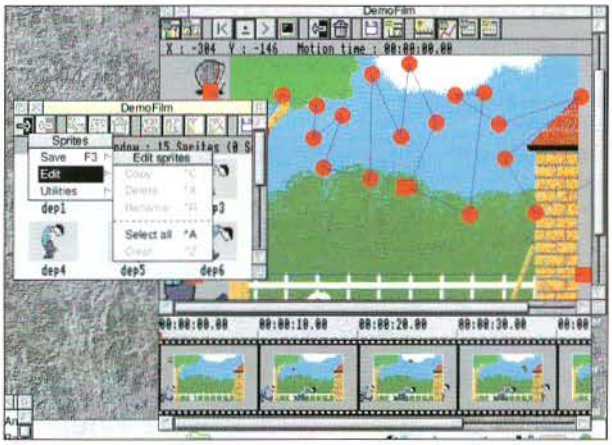


Figure 1. PrimeMover's main window

This is a pity as there is some clever stuff in the workings of PrimeMover - for example, a single operation constructs an *animate* (animated sequence) from 12 sprites. Variety and flexibility abound throughout the application.

However, managing and remembering the relationships between the time, motion and components remains potentially confusing, and manipulating them successfully requires a lot of practice and several attempts at the simplest of operations for them to become second nature; this intuitive use is really what is required for the software to be used creatively and originally, rather than just literally going through the motions.

Screen control

Most operations are controlled by dragging, with significant distinctions being made between

could have been avoided, though.

It is an undoubted plus that each path and object can be moved, updated and controlled independently. In the long run this will make for greater potential for the package. It's a pity, though, that a more intuitive way of achieving this wasn't found.

PrimeMover allows you to zoom in and out of the main window, to align motions to a grid, which can usefully be resized and magnified. There is also some control of the type of motion possible: with *Step Mode* on, movement is jerky and may be more appropriate for walking or moving between discrete locations, for example; when turned off, the motion is rather more like gliding.

The films may be saved either in PrimeMover format or as Ace films, and there is a password facility so that one person can set the user preferences (as they will appear on the button bar) whilst those that do not have access to this facility will be unable to alter them. The pools (animate and sprite) behave in part like pseudo-filing systems (see figure 1), with a variety of operations possible. Indeed, much of the sophistication of the package is there; it is just difficult at times to access it.

Documentation

The 90 page A5 ringbound manual is thorough if a little turgid in places. There is a brief index and tables of such useful items as keyboard shortcuts, error messages and how to rummage into the *Params* file. Operations are clearly illustrated; you will quickly recognize the rather baroque graphical interface which Minerva has used for all its Prime range even before you get going with the software. It is recommended that you start at the tutorial as this takes you through the steps you are likely to want most, in the order that will probably turn out to be most useful for prolonged use.

Indeed, the manual is not especially well laid out; a more thoroughly worked example would have been welcome when so much new program-specific terminology is used (*Sprite Pool*, *Motions*, *Animates* etc.). There are some pretty dense passages, too, where it is not immediately clear what is being referred to.

Each feature is covered several times, in an overview, in the tutorial and again as each of the operations is explained in reference sections. Busy teachers might not find this the most convincing approach.

Conclusions

PrimeMover is an ambitious addition to the Prime Series. It sets out to do what many will think of

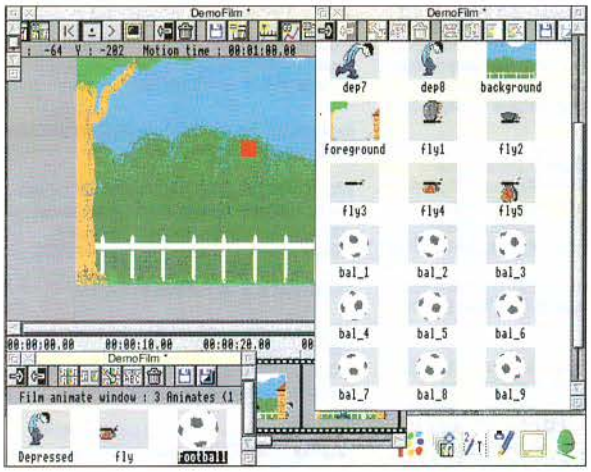


Figure 2. PrimeMover in use, with several large windows open.

as a simple task (producing user-creatable graphics that relate to one another and relate to time in a controllable way) in the style of the other titles in the series.

It falls down, not in the scale of the task, nor in the thoroughness with which this is achieved; rather in the ways in which the model used to handle the task is made concrete to the user, particularly the young user.

At £70 inc. VAT it is possible to imagine many cases where experimentation for its own sake will still make PrimeMover worth buying. Indeed, for those prepared to persevere and become familiar with the model, it may well repay the investment of time. But for those new to the area of animation, for young users who need something less "mechanical" or more intuitive, and for anyone without the time and patience to work through PrimeMover's sophisticated features, then perhaps Iota's *Complete Animator* represents a better bet.

PrimeMover	
Supplier	*Minerva* *Baring House* *Baring Crescent* *Exeter EX1 1TL* *Tel. 01392 437756* *Fax 01392 421762*
Price	*£69.95 inc. VAT*

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Classifieds

Members may advertise their unwanted Acorn related hardware and software through the personal ads column free of charge. However, we are unable to guarantee in which issue your advertisement will appear.
We also accept non-member's ads at the rate of 40p per word

Mannesman Tally 9 pin printer with spare ribbons, works ok on (Electron.BBC Master.A3000) perfect condition £60, HCCS internal 3 slot multipodule + IDE interface &Just needs IDE drive) for A3000 £25, various games for BBC Master (5.25") offers? Genie in a cartridge for BBC Master £25, 2 BBC Master ROM cartridges £5, Data recorder (Electron/BBC) £10, Electron ROMs (Slogger) ElkMan, Printer, Stargraph, DFS, Starstore, Master ROM (BEEBUG) all with manuals, offers, monitor/printer stand £5. Tel. London 0181 778 2766.

A5000 base unit, RISC OS 3.1, 4Mb RAM, 80Mb HD, includes PC Emulator and manuals, perfect condition £625. Tel. London 0181 882 2592.

Zool, Pandora's Box, Saloon Cars, Black Angel £12 each, Galactic Dan, Nevryon, Interdictor, Iron Lord £9 each, X-Fire, E-Type, UIM, The Olympics £6 each. Tel. Sheffield 0742 648373.

Simon The Sorcerer £20, Chocks Away Compendium £10, Aldebaram £10. Tel. Devon 01364 73254 w/ends.

CC Laser Direct interface board for Canon LBP4 printer, complete with instruction book and software, Akhter single 5.25" DD, 40/80T switchable, AU magazines nearly complete for 1985, complete for 1986 and 1987, occasional issues (4 to 6 per year) for 1988-1992, A&B Computing and Arc World magazines (no discs), complete for 1984, nearly complete for 1992, partial for 1985-1992 and 1993-1994. Offers on any of these items. Tel. Loughborough 01509 263904.

A305, 4MB RAM, 40Mb HD. RISC OS 3.1, colour monitor, PC Emulator, many games and serious software inc. Lemmings, 1st Word Plus and loads of good PD, also many magazines, discs and PRM's £425. Tel. Rotherham 01709 370112.

Risc PC600, 9Mb RAM, 420Mb HD, 14" monitor, Acorn CD upgrade and 486 PC card, loads of good software including some CD ROMs £1,650, Ground Control Teletext adaptor with latest software £60, Pro Pad games controller £20, complete works of Shakespeare CD ROM £20, PDCD-2 £20, Hutchinson Encyclopedia CD ROM £45, Revelation Image Pro (including Risc PC upgrade) £40, E-Type 2 £15, Iota Desktop Database £10, Dynalink Fax modem with ArcFax software £60, all in perfect condition, postage extra if required. Tel. Gwent 01873 853538.

ARCticulate £7, Enter the Realm £7, Sensible Soccer - International Edition £10, Archive Mousemat £1.50, Back issue magazine cover discs (1991 onwards, Arc World, AU and Acorn Computing) £1 each. Write with your requests to Jon Aylwin, 4 St Margarets Close, Hemyock, Devon EX15 3XJ.

Sibelius Software Six, manual etc. £99, Tablemate two £19, Bank Manager £5, AVP French £5, Music Theory £10. Tel. Lancashire 0706 817570.

BARGAIN at £130 the lot! (o.n.o.) Advanced disc Investigator, Commstar II, Dumpmaster, Help, Master ROM, Smart cartridge, Screenprint colour, Viewstore, Zoom (machine lang. monitor), various programs and games on disc, manual for BBC Micro Assembly Lang., Dabhand Guide to View, ViewIndex, Viewspell, 7 assorted dual & quad cartridges to hold eproms. Tel. Middlesex 0181 892 9278.

Genesis Plus £15, 1st Word Plus £10 brand new, unregistered, E-Type £7.50, Powerband £7.50. RISC OS applications and User Guides £3 each or £5 the pair. Tel. Winchester 01962 880250 eves.

A5000 Learning Curve with 41Mb HD and 2Mb RAM, AKF18 monitor, Dr DOS 5, 1st Word Plus, Genesis, PC Emulator, Joystick and several games £750. Tel. Telford 01952 415550.

A3000 4Mb RAM, RISC OS 3.1, 20Mb IDE HD, Ovation, PC Emulator, Taxan Multi Vision monitor £650. Tel. Kent 01732 454707.

A3000, 4Mb RAM, 60Mb internal IDE drive, ARM3, RISC OS 3.1, VIDC enhancer, boxed with manuals £350 o.n.o. RISC OS 3.1 PRM £50. Tel. Cambridge 01223 503735.

Pocket Book series 3a, 512k RAM, new battery, to buy new now £140, accept £100, Psion games disc one (7 games) £20. Tel. Worcester 01905 754277.

RISC OS 3 Style Guide with new look disc, new and unused £6. A410/1, 4Mb RAM, 33Mhz ARM3, 50Mb HD (2 of), new look desktop, I/O Podule, Midi, Sound sampler, keyboard extension cable and postage £525 o.n.o. Tel. Worcester 01905 754277.

A440 ARM3, 20Mb HD, RISC OS 3.1, BEEBUG VME & 5.25" FD interface, Taxan 770+LR monitor, Panasonic KX-P1124 printer £550, also BBC model 'B', dual 5.25" Cumana drive, auto disc sharer, EPROM programmer, 12" Philips green screen monitor, any offers? Tel. Lancs 01772 685553 eves.

A3000 Learning Curve package & Epson LQ400 printer, full documentation all for £220. Tel. 01296 696378.

A5000 LC, 4Mb RAM, 40Mb HD, RISC OS 3.11, AKF18 monitor, £750 o.n.o. Tel. Lancs 01257 422302.

A5000, 33Mhz, 80Mb HD, 4Mb RAM, AKF50 monitor, PC Emulator (Dr DOS 6), Easiwriter, Datapower, just over 1 year old - all for £800. Tel. Herts 01462 682961 eves only.

Impression Style complete, boxed, manuals £55 p&p included. Tel. Surrey 01428 713326 eves only.

A410/1, 4Mb RAM, 42Mb HD, ARM3, RISC OS 3.1, almost new Acorn AKF50 multiscan monitor, sound sampler card, modem, plus heaps of software, boxed, manuals, mint condition £800 o.n.o. Tel. West Yorkshire 01924 430230.

116Mb IDE HD £70. Tel. Norfolk 01328 864177.

A5000 Learning Curve, 4Mb, 40Mb, original monitor, bargain £500, cash on purchase, Tel. Christchurch Dorset 01903 893211 to arrange a time to pick up, no defects, will also throw in some games that won't work on the Risc PC.

A4000, as new, well loved, 4Mb RAM upgrade, 81Mb HD, RISC OS 3.1, ARM250, hi-res multiscan monitor, boxed with manuals, Acorn registration £650. Tel. 01509 853166 after 4pm.

RISC OS 2 PRM's £25, Archway £25, AlphaBase £10, Alerion £5, Artisan II £10, Artisan Support Disc £5, Break 147 & Super Pool £15, Blowpipe £10, Corruption £10, Conqueror £10, Desktop Thesaurus £10, Drop Ship £10, EMR Sound synth £15, E-Type £10, E Type Designer £10, Fugitives Quest £10, Holed Out Compendium £10, Hoverbod £5, HP Printer Drivers £10, Inertia £5, Sporting Triangles £5, Nevryon £10, Orion £5, Quazar £5, Rotor £10, Rise in Crime £10, Startrader £5, Terrormex £5, The Pawn £10, Thundermonk £5, Wherewith the Cluse £10, Word Up, Word Down £5, Word Works £20, Zarch £5 all boxed with original docs. Tel. Hertfordshire 01442 822875 6pm-9pm w/days.

A5000, 4Mb RAM, 120Mb HD, RISC OS 3.1, Acorn multisync monitor, 2 yrs old and has had only light home use, £800 o.n.o. (I could throw in some software if wanted). Tel. Devon 01823 680111.

Wordz - unused copy, boxed with manual and two Abacus Zline discs of resources/suggestions/helps, etc. £30, Acorn Pocket book, as new, with schedule, boxed with manuals £150. Tel. Shropshire 01952 247783.

RISC PC 9Mb + 17" monitor, including CD ROM & Hutchinsons Encyclopedia £2,200. Tel. St Albans 01727 846803 anytime.

Turbo drivers v4.02, for canon printers with printers v1.24 (duplicate present) £35 o.n.o. Tel. Hertfordshire 01438 718507 after 4pm.

Integrex Colourjet 132 colour inkjet printer, as new condition, hardly used, upgrade forces sale £180, also 1st Word Plus, Genesis Plus, Pacmania all for sale, £5 each. Tel. Edinburgh 0131 668 4798.

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Write-Back

The Right Dimensions

I wondered if you would care to comment on the apparent confusion about which is the 'correct' icon type for a writable icon - should it be 3D or not?
Steve Cunningham

Interestingly enough, there has been a lively debate recently on the Internet about this very topic. The arguments for plain two-dimensional writable icons can be summarised as follows: the Style Guide specifies them, all the illustrations in the Style Guide show 2D writable icons, and a more professional-looking desktop results from all applications following the same style. The arguments against are that RISC OS 3 provides a 3D icon type (R7) specifically for writables, a 3D desktop looks more professional when all elements of a dialogue box are uniformly 3D, and the wording of the Style Guide is confused and ambiguous; for example, it mentions an icon border 6 pixels wide, which can only relate to a 3D icon of type R7; and part of the validation string specified for the icon ("Ktar") does not tally with the words below, which state "Pressing Return .... should activate the default action button, not move the caret to the next field".

Some companies, such as CC and Colton, use 3D writable icons. Others, including Beebug, stick to the Style Guide. Acorn's rules are there to be followed, but in a way the debate is a microcosm of the wider issue of whether civil disobedience is justified when a law is seen to be unjust or untenable. CC has always believed it is, and led the way in steering RISC OS towards a 3D look in the first place. It continues to use other design elements which it pioneered, but which are 'non-standard', such as action buttons that turn orange when pressed.

The toolbox provided with the new C/C++ from Acorn, which is expected to be used as the standard method of designing Wimp applications from any language, forces the use of non-3D writable icons.

Caught in the Net

Many thanks for the new Netline column. It must work, as two days ago I wasn't on the Net! The main problem I had in getting started was that you seem to get all the info you need after you've got onto the Net and don't need it. That's why articles such as Netline are so valuable. Thanks for a splendid mag and I look forward to more articles on the Net (covering telnet, WWW?)....
Brett Laniosh

I would like to thank you for your recent articles on the Internet. I've been wavering for some time over whether to jump on the bandwagon, and the coverage in RISC User has encouraged me to take the plunge. I hope you're not going to abandon the topic - I shall be relying on you for a while yet!
Roger Carver

I'm pleased that Netline has already been of some help. We're aiming to cover many of the useful areas and tools of the Net over the coming months, but the system and its potential are so huge that we can only scratch the surface. We would of course like to hear what readers think of Netline and the Internet - does it meet your needs or whet your appetite to get connected, or would you rather it would just quietly go away?

If you're on the Net, or have access to email, don't forget that you can contact Netline at netline@rheingld.demon.co.uk. Please don't use this address for any other purpose.

PinBoard

I am hoping you can help me locate a Prolog compiler or interpreter suitable for a Risc PC. There used to be a version available for the Archimedes (Prolog-X). Three possibilities occur to me: Acorn may release a Prolog for the RISC OS environment; I could buy a PC card and mount one of the DOS implementations; or I could attempt to install Linux, the shareware version of Unix. I am distinctly nervous of the last option as I understand it involves re-partitioning the hard disc. My favourite choice would be the first, as I am not a DOS/Windows enthusiast, but I do not know know of a RISC OS Prolog.
A H Skaife d'Ingerthorpe

Acorn has made no announcement about a new version of Prolog, but there are PD versions around. A RISC OS port of SB-Prolog is available on the Hensa archive. If you're on the Internet you can ftp to:

micros.hensa.ac.uk

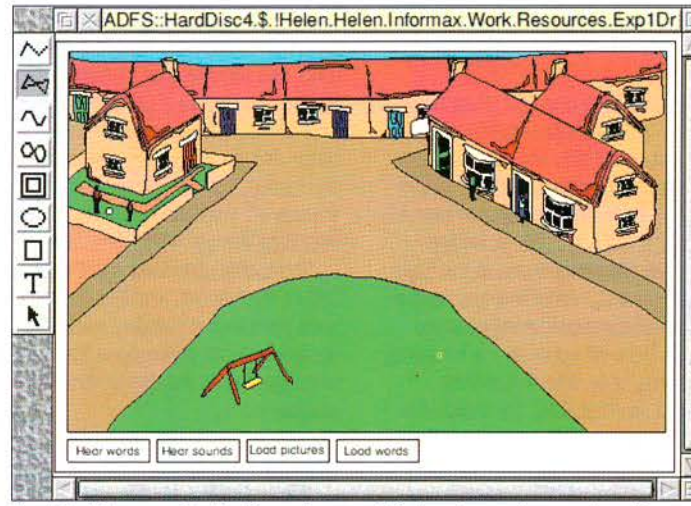
and the Prolog application is at:

/micros/arch/riscos/a/a067

There is also apparently a different version of Prolog available from Stuttgart University's Acorn ftp site.

Stay Informed

Helen Melhuish looks at the *Informatrix* Concept Keyboard and *Informax* overlay designer from a hands-on perspective.



An A3 picture created in Draw. It was printed and superimposed on the concept keyboard in order to define the different areas to be used.

Perhaps one of the most neglected pieces of computer hardware in many schools is the concept keyboard. Once regarded as useful only to a relatively small number of children who were unable to access a normal keyboard, this device may at last be starting to come into its own by showing its true potential as a tool that can be used by children of all abilities. A concept keyboard is essentially a straightforward device - a rectangular board with a pressure sensitive surface of cells, with a grid marked on it allowing paper overlays to be superimposed. Overlay files, which in effect program the keyboard, are created to be used in conjunction with the paper overlays.

Concept keyboards are simple to operate - pressing an area of cells sends information to the computer, usually sending text or graphics to a word processor. The number of cells can vary from keyboard to keyboard, meaning that some can use more complex overlays than others. What is special about the Informatrix board is its high resolution, so both small and/or complex areas of the keyboard can be used as required.

Informax is an overlay designer written by Simon Hayles for SEMERC. It was created with the A3 *Informatrix* board in mind, but it can be used equally well to create overlays for other A3 and A4 concept keyboards too. It can produce overlays with a simple grid containing pictures and/or words, but it can also go much further than that when used in conjunction with the Informatrix board.

Award-winning Design

SEMERC and The Concept Keyboard Company, joint developers of the Informatrix board, gained recognition in January this year by winning the Silver award for Special Needs at BETT 95. The board, which plugs into the serial port, has 4096 cells, making it the highest resolution board currently available. It is robust and has a good long lead which could make life easier in a crowded classroom where it may need to be stored without being unplugged. The advantage of having so may cells is that you can be much more precise in specifying the area which will perform the effect you require. It is no longer necessary to have a large rectangular area assigned to load a short text item or a single picture. Overlays no longer have to appear as if they are based on a grid. This makes it ideal for using complex scenes rather than sets of individual pictures or words.

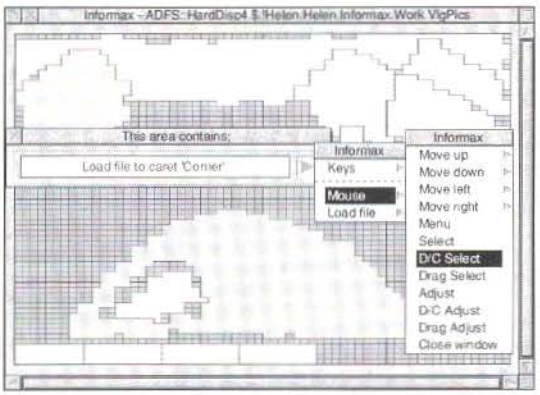
To find out what difference such high resolution could make I undertook a simple project to create an overlay consisting of a picture of a village, which would enable text, graphics and sounds to be sent to other programs when the keyboard was pressed in a particular area. I began by creating an A3 picture in Draw (figure 1). Although predefined grids are available in Informax, I wanted to start from a fairly detailed scene which had to be explored. I also began this way because I could not get Informax to print an overlay to scale on my A3 printer. I guess for most schools this won't be a problem as a photocopier with A4 to A3 enlargement facilities will probably be more common than an A3 printer! Having printed out my scene I loaded Informax and was presented with a grid ready to work on. Had I needed to I could have changed the options for the type of board I was using from the icon bar.

Area Definition

Defining areas on the overlay couldn't be simpler - rectangular shapes can be dragged out, moved or resized with the mouse, or simply pressing an area of the concept keyboard with your finger will select a cell or groups of cells. A useful stylus, like a fat felt tip pen with no ink, is provided with the board. Different 'drawing styles' can be employed when defining areas. Choosing the *Dots* option means that one cell at a time is selected, but this can be a bit tedious for doing large areas, so I tended to use *Blobs* most of the time. *Lines* is also a very handy option - with this selected the places you press on the keyboard are literally joined by lines, making it easy to define areas with complex borders which you can then fill in later. The other styles are *Squares* and *Wide lines*. Fortunately, all of these styles can be combined with the *Erase* option so that you don't have to delete whole areas should you want to make a change.

Once the various areas of my picture were defined, I wanted each of them to send some text to the caret when the keyboard was pressed in that area. Assigning a command is done by double-clicking with the mouse on the area in question, which pops up a dialogue box. You can type text or drag a file into this dialogue box. Files to be sent from the concept keyboard must be stored in a directory called Resources on the same level as the overlay file. Any type of file can be used (I was even able to use it to load Replay files into ARPlayer!). Although this is convenient, it would also have been nice to have the option to specify a file by its pathname, so that large files could be loaded from a CD-ROM, for instance.

Areas can also be defined to replicate mouse movements (including double-clicking, clicking with Adjust etc.) and keys on the normal keyboard such as Return, Shift, cursor keys, and others. For now, all I wanted was to be able to load text, so I typed the phrases I required into the command box and saved the file. To test it I loaded the *OverlayOn* application and tried it out with Draw, though any program that lets you type in text would have done.



Dragging a file into the command box assigns that file to be sent to the caret when the relevant area of the keyboard is pressed. Alternatively, the same area could be assigned a mouse function.

Loading Files

Next I wanted to be able to use specific areas of the overlay to load files containing sections from the scene I had created, and while I was about it I also wanted to be able to load appropriate sounds and speech. My first overlay file was called *VlgWords*. I copied this three times and renamed the new files *VlgSnds*, *VlgSpk*, and *VlgPics*. On each overlay I defined some new areas to load each of the other overlay files. This meant that I could still use the same paper overlay but have different effects when different files were loaded. To create the overlay that would send pictures to the caret or pointer I extracted the parts of my drawing that I wanted and saved them as separate files in the Resources directory. Then I redefined the areas on the *VlgPics* overlay by dragging each picture to the command box for each area, so when this file is active pictures are loaded into Draw rather than text.

I modified the other files in a similar way using sound samples instead of pictures. I used SEMERC's *ReSound* sampler and software to create speech samples to match my text phrases, and some environmental sounds such as a ball being kicked and the swings squeaking. These overlay files could not be tested in Draw, so instead I used *Ultima*, a multimedia authoring program from SEMERC which can play samples.

Now I had a collection of overlay files and accompanying resources which could be used in a variety of ways. Using one paper overlay the concept keyboard could be used for inputting sound, graphics and text into many different programs. When creating an overlay to be printed, Draw files and sprites could be dropped onto the defined areas, or typing in the command box would assign text to that area. Text and graphics are easily combined as areas can be overlapped.

Informax and the Informatrix board can make resources even more accessible to children, either through the 'story scene' type of overlay or through the more traditional grid-based overlay. My criticisms of Informax are that I couldn't print an A3 overlay, and I would have liked the ability to have different sized text in different areas, though this would have no effect on messages sent from the board. Nevertheless it is very straightforward to use and simple overlays can be designed in a matter of minutes. This program could encourage some teachers to rethink the way they make some resources available to their children.

Products: Informatrix and Informax

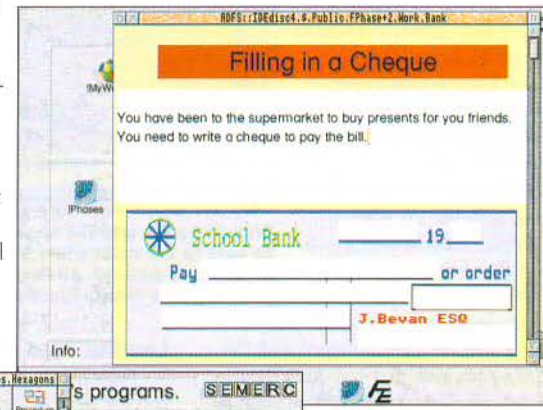
Supplier	**SEMERC** **1 Broadbent Road** **Watersheddings** **Oldham OL1 4LB** **Tel. 0161 627 4469** **Fax 0161 627 2381**
Prices	**Informatrix £149 ex. VAT** **Informax £30 ex. VAT** **(£15 if upgraded from other overlay designer software)**

The SEMERC Risc PC

Chris Drage investigates an interesting variant on the Risc PC which is aimed at educational users

Although graphical user interfaces (GUIs) such as RISC OS, which are now such a feature of today's computers, have revolutionised and standardised the way in which we interact with our machines, they are not always suitable for young children or those with special educational needs, as there can be a plethora of icons and confusing windows on the screen. RISC OS is a far more friendly, child centred operating environment than Microsoft's Windows, which was developed for industry use rather than educational users, but there is still a need for further simplification especially for those who need a simpler approach. Hence the development of the SEMERC Risc PC.

The SEMERC Risc PC has been put together by SEMERC, Acorn and Cumana to provide a machine that can be plugged in, switched on and used straight away. The system has a large amount of software installed on the hard disc, set up to make it readily accessible. The software has been selected to provide a range of activities for those learners who have special needs and to allow for progression. The hardware includes a standard Risc PC with 5Mb of memory, a 210Mb hard disc and a 14-inch SVGA screen. The CD-ROM version is based on Acorn's multimedia Risc PC and comes equipped with a Cumana 300i drive and a pair of stereo speakers with independent volume control and power supply. For an extra £35 Cumana can supply an additional sound mixing board which will allow the CD sound to be output through the computer's internal speaker, which may be important for some users.

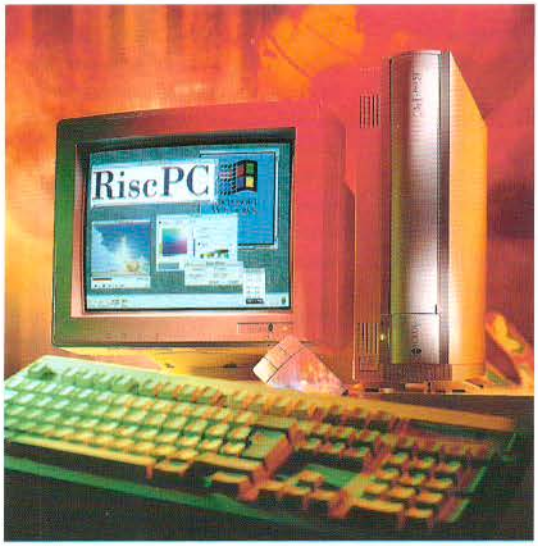


Full Phase (above) and Go-Go

Bundles of Software

In terms of software, each system comes very well equipped with everything loaded and ready to go. SEMERC have sensibly opted to bundle some of the best special needs software around to help young or disabled learners to have the best access to the technology currently available. But it is a mistake to think that this machine is targeted solely at the ESN market, because most of the software can be used successfully with mainstream learners throughout Key Stages 1-2 (5 to 11 years). *Full Phase2+2* is a word processor with speech and DTP facilities with which some really attractive presentations can be created. There are extra resources included which are unique to the Risc PC version: pre-prepared wordbanks, borders, template files, and a wide range of pictures. *My World 2+2* is an award winning program very popular in British schools (see RISC User 8:3 page 43). This 'framework' program can be readily tailored to suit particular users or activities. There are dozens of files available for it at all levels - including the excellent *Technology and Design* CD-ROM.

Go-Go is a no frills turtle graphics program which provides a useful introduction to Logo, while *Informax* is a Concept Keyboard editor which also works with the excellent *Informatrix* overlay board



The SEMERC Risc PC

(Helen Melhuish looks at these items elsewhere in this issue). Remember, you do not need to have a user port fitted these days, as all modern overlay keyboards like Infomatrix use the serial port. All the software included in the system has accompanying overlays. Two programs which are particular favourites with younger children are Brilliant Computing's *Facepaint* and *Mini Alex*. With the former you can create hundreds of different faces and make them speak! The latter program is a cut down version of *Smart Alex* in which you can make the character Alex laugh, cry or even blow raspberries!

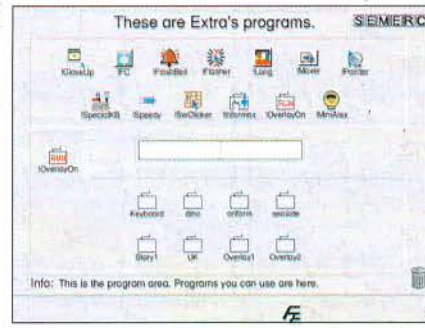
Specifically for children with disabilities and visual impairment, the package includes ten special access utilities and a demonstration version of Widgit's *Writing With Symbols*. This has limited vocabulary linked to the theme of the zoo but otherwise contains the full features of the original program. Similarly, there's a working demonstration of the award winning *Clicker* (Crick Computing), which in its most basic form resembles an on-screen concept keyboard providing access to writing. This version however, quits after 10 minutes' use, and if it proves valuable you would be well advised to purchase *Clicker Plus* which has many enhancements.

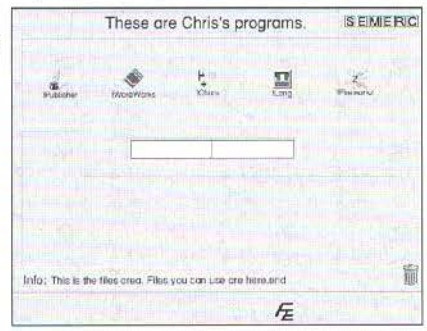
The Risc PC + CD version comes with SEMERC's *Treasure Chest* CD-ROM to get you started. Unlike the standard system there are no pictures or sounds installed on the hard disc, but there is a great deal more on the CD which is literally packed with images and sound samples.

A Different Look

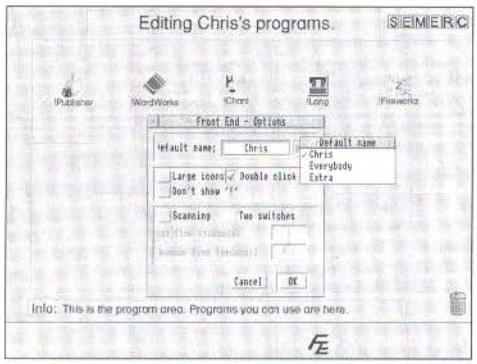
When you switch on a SEMERC Risc PC computer you are immediately aware of the different 'look' to the screen, with the icon bar obscured by a new front end called, not unexpectedly, *Front End*. The screen now has a title and a range of program icons set up by the teacher/adult available for the child. There's a blank area for the currently selected program and its related files, a small text window and a rubbish bin. If you set up the program to run as part of the boot sequence then you have a system not unlike Research Machines' *Window Box* in concept: to the inexperienced young user, a familiar and simple working environment whenever the computer is switched on.

In order to run a CD-ROM you have to enter Front End's edit mode from which you can make the icon bar accessible. This appears a little clumsy when compared with the overall slickness of the system and I would have preferred to see more direct access. There's no doubt that Front End still needs some tweaking to give it more control over the desktop, but as it stands it all makes loading, saving and running





Different front ends for different users



Editing a front end

applications so uncomplicated, providing learners with access to their own files while the rest of the applications and files are kept safe from prying fingers - all very essential for classroom management of a hard disc system.

Beebug Educational Prices
Standard Risc PC
£1299 + VAT
£1426 (inc. CD ROM) + VAT

Customisation

The great advantage of the SEMERC Risc PC lies in its ability to be set up with different front ends for different users. Within a school each computer can be set up with applications configured to suit the abilities and appropriate stage of development of particular pupils. It's neat, it's flexible and quite simple to use. Used intelligently, the small amount of time it takes to set up on individual machines is well compensated for in terms of ease of access to the software that Front End offers. If you are wavering between a SEMERC system and a standard Risc PC, just remember that by taking the bundled software into account you are gaining to the tune of more than £300, with additional savings on the CD system. Nursery schools, infant departments and special schools should not ignore the huge advantages offered by this system.

Other users may prefer to shop around for a discounted machine and obtain Front End (£25) separately in order to take advantage of the simple working environment it offers. Don't simply dismiss the SEMERC Risc PC as a special needs machine; its resources are applicable to the full primary school. If you added an integrated package such as Colton's *Fireworkz Pro* (see the review elsewhere in this issue) you would have an ideal home computing system for the whole family to share.

SEMERC Risc PC

Supplier	**SEMERC** **1 Broadbent Road** **Watersheddings** **Oldham OL1 4HU**
Price	**£1450 + VAT** **£1650 (CD-ROM version) + VAT**

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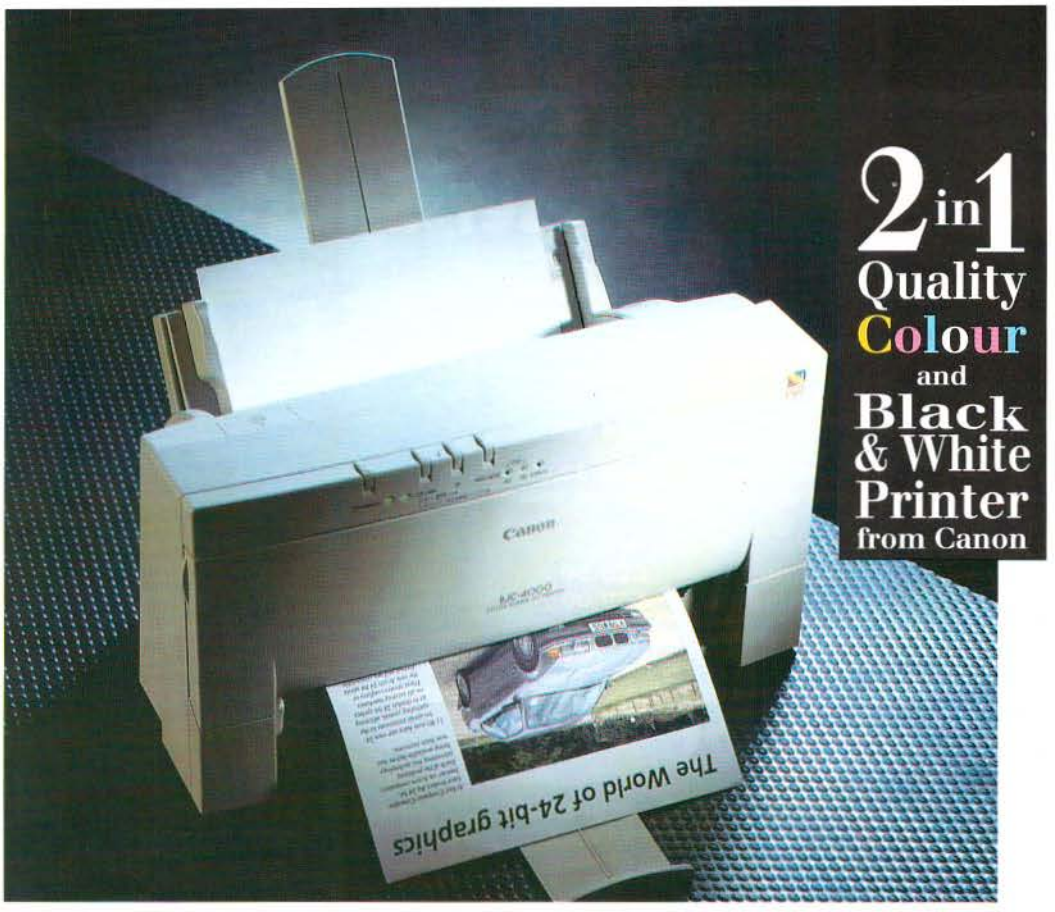

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The BJC-4000 is a unique new printer in the Canon range which offers both black and white and colour capability. It is designed to appeal to users who primarily print in black and white but who also have a colour requirement. Mono printing is extremely fast (about twice as fast as the BJ-200 on average) due to a special high-speed black ink cartridge and printing can be at a resolution up to 720 dpi using interpolation. However, it can also produce high quality 360 dpi colour prints. The inks have been specially developed by Canon for this printer and are fast drying and water resistant.

RISC OS 3 Turbo DRIVERS

The printer is shipped with a BJC-4000 specific version of the new V4 TurboDrivers. Timing tests on a Risc PC indicate that the TurboDrivers still offer a significant speed advantage over the standard Acorn drivers, returning control and completing the print between 3-4 times faster for an average page. The TurboDriver software also supports advanced grey-component replacement, which prevents over saturation and produces more accurate colour reproduction.

The BJC-4000 is supplied with the TurboDriver V4 software (and DOS/Windows drivers), manual, printer cable and a set of colour inks for £289+ £10 p&p + VAT (£351.32incl.) It is suitable for all models of Acorn RISC computer with RISC OS 3.1 or later. 4 MBytes and a hard disc are recommended. Available now direct from Computer Concepts.

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Masterfile is a fast and flexible general purpose database providing powerful data management facilities suitable for business, education and home. Masterfile is probably the easiest Acorn database package to setup and use! Its many features include a comprehensive indexing system, subsets which limit access to just those records which match search criteria, and a report generator which allows databases to be printed in a variety of card, spreadsheet or label formats.

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Easy C++

C++ Development System

Easy C++ is an excellent implementation of the in-vogue object oriented programming language C++. This implementation conforms to the latest Stroustrup text and supports both Templates and Exceptions. Unlike some other implementations, Easy C++ is not a C++ to C translator but compiles C++ source directly to ARM code making it quick and easy to use.
Easy C++ uses the much praised Easy C WIMP interface which allows programs to be compiled, linked and run at the click of a button. The package includes ANSI C and IOStream libraries, Make facility, integrated ARM assembler, source level debugger and also supports Throwback. The original highly acclaimed Easy C package is also still available.

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TypeStudio is the best selling font effects package that allows outline fonts to be manipulated to produce professional quality posters, banners, logos, letterheads etc. — the possibilities are endless. Text may be flowed along straight or curved paths, or moulded into almost any shape. A wide range of interesting effects may then be applied to enhance the design further. These include: wall, floor and graduated shadow, 3D text, mirror, plinth, slant. You can use all of these effects on Draw files too! TypeStudio is intuitive to use, and unlike some other packages, paths and moulds may be created and edited using the drawing tools provided, so you can do all your design work using just the one package.

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Hearsay

Advanced Communications

Hearsay is the definitive general purpose communications package for Acorn systems, designed for easy communications for the first time user, but with advanced features making it also the professionals choice.
Hearsay provides high quality VT terminal emulations, and is ideal for use with Prestel, Campus 2000, Compuserve and virtually all bulletin board systems. Other features include: background file transfer, number directory, script language and support for popular modems.

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Hard Disc Companion is the acclaimed package that provides a structured system for backing up hard drives to floppy discs and other devices.
It supports Full and Incremental backups with data compression. Files to be backed-up or ignored are chosen using simple drag operations. The backup specification may be saved in a script file for use at a later date.
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RISC user

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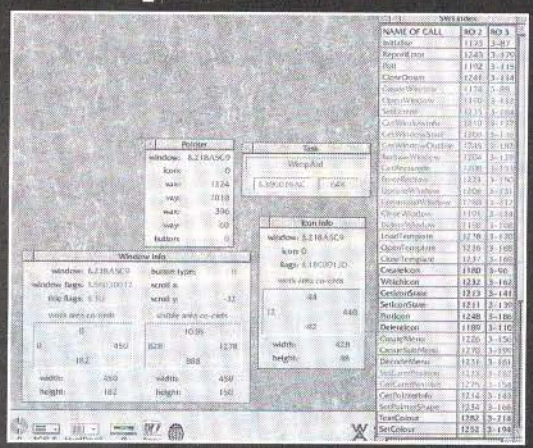
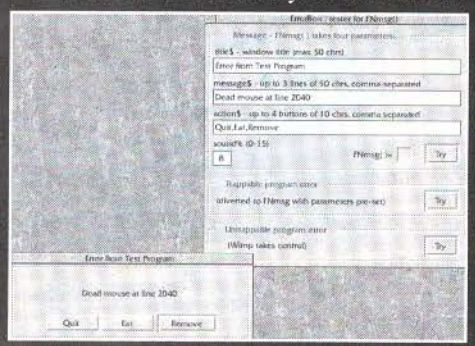
WimpAid *by Graham Crow*



WimpAid is an invaluable tool for Wimp programmers or anyone who needs information about the desktop while programs are running. It was first published in RISC User 4:1, and has now been substantially updated. WimpAid gives you full information on the window and icon currently under the pointer, and is updated as you move the mouse around. It also contains an on-screen index of Wimp SWI calls for quick reference, together with the relevant PRM page numbers.

Error Box *by Graham Crow*



This application accompanies the Wimp Topics article on page 31. It provides a working example of the techniques described in the article, allowing you to create more attractive and useful error boxes than the standard ones provided by the Wimp.

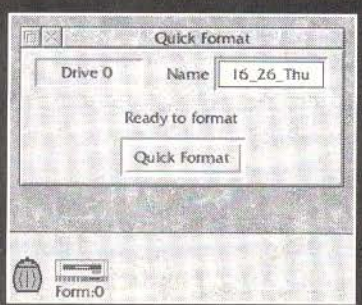
ArcScan Data

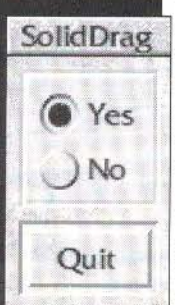
ArcScan index for this month's RISC User.

Quick Format

by Matt Browne

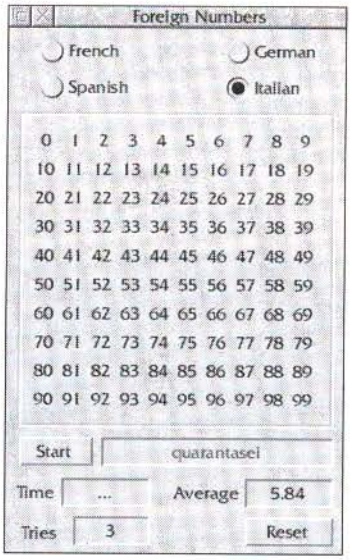
If you're one of the many readers who have missed the usefulness of our FastWipe application after graduating to high density discs, you'll love this! It will re-format any disc in a few seconds - 800K, 1.6M, DOS 720K, DOS 1.44M... it can handle the lot. It automatically detects the current format of the disc and wipes it clean before you can say "floppy disc controller".





Numbers

by Richard Taylor



Holiday time is approaching, and you will need to brush up on your foreign numbers. How can you ask for 39 litres of German lager if you can't remember that it's "neununddreißig"? *Numbers* can help you refresh your memory, and will also be useful for revision if you're studying a language. It covers French, German, Italian and Spanish, and you can either click on a numeral and see the correct word displayed, or you can ask the program to test you by displaying a word and timing your response as you click on the correct number.

Solid Drag

by Graham Crow

RISC OS 3 introduced the facility of solid dragging for icons - when you drag a file icon you can drag the actual sprite around the desktop instead of just a dotted outline. However, there is no configuration command to turn it on or off. Solid Drag rectifies that situation by providing a window from which you can configure solid dragging on or off at will.

MAGAZINE DISC

May 1995

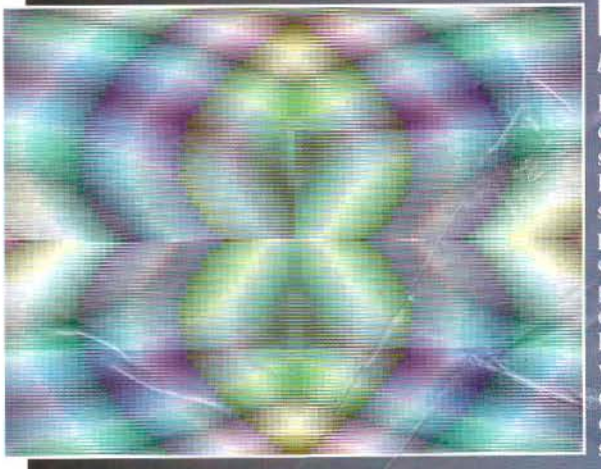
Word Grid

by Richard Mawhood

We've all seen those puzzles where you have to find a set of words hidden in a grid of letters - we've even done the odd one in RISC User! Now you can compile your own word grids - but with a difference! This program allows you to design the shape of the grid - it can be a circle, a heart, a leaf, a Risc PC or whatever you choose.

Newsgroup Sorter *by Alan Wrigley*

This little application is designed for Internet surfers who enjoy exploring the thousands of newsgroups on offer. To keep up to date with what's available, just download the names of new groups as they are notified, add them to your master list, then run Newsgroup Sorter to sort them alphabetically and weed out any duplicates. It can also be used to sort any file containing text strings.



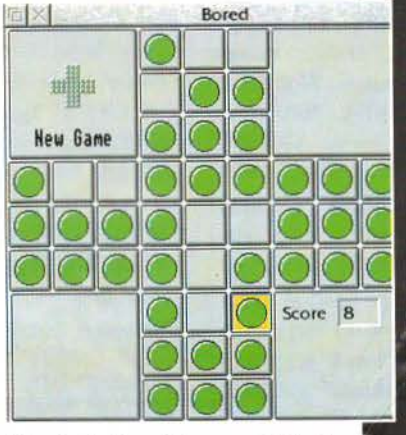
Flux

by George Saliaris

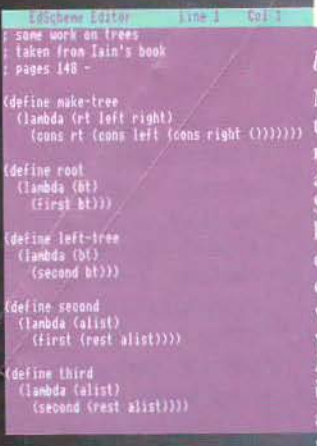
Having a party? If you can't afford a light show, try Flux instead. It displays hypnotic symmetrical coloured patterns which change constantly according to parameters which you can alter interactively. It's more exciting than watching the twiglets disappear, and it's a lot cheaper than artificial stimulants!

Bored

by Graeme Davidson



What's the first thing you think of doing when you're bored? Of course - you want to play a game! *Bored* is an excellent implementation of the age-old favourite Solitaire. You need never get bored again!



EdScheme

by Lambda Publications

Most RISC User readers will have heard of the computer language LISP, but many may never have used it. LISP was developed for artificial intelligence applications, and Scheme is an object-oriented dialect of the language. Lambda Publications has been distributing a version of Scheme for Acorn computers for a couple of years now, and would like to introduce the language to a wider audience via the RISC User disc. *EdScheme* is a full command-line driven implementation of Scheme, and is supplied as shareware; if you find it useful you may register with Lambda and purchase the documentation.

Power Control *by Peter Hillman*

This program is described more fully in *Just a Page* on page 48. It allows you to power down many types of hard drive when not in use for long periods.

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Any 5 packs	£30	£2
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